FOR 10559534 by Cynthia Hamilton

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| | | |
|---|---|---|
| NEWS 1 | | Web Page for STN Seminar Schedule - N. America |
| NEWS 2 | OCT 02 | CA/CAplus enhanced with pre-1907 records from Chemisches Zentralblatt |
| NEWS 3 | OCT 19 | BEILSTEIN updated with new compounds |
| NEWS 4 | NOV 15 | Derwent Indian patent publication number format enhanced |
| NEWS 5 | NOV 19 | WPIX enhanced with XML display format |
| NEWS 6 | NOV 30 | ICSD reloaded with enhancements |
| NEWS 7 | DEC 04 | LINPADOCDB now available on STN |
| NEWS 8 | DEC 14 | BEILSTEIN pricing structure to change |
| NEWS 9 | DEC 17 | USPATOLD added to additional database clusters |
| NEWS 10 | DEC 17 | IMSDRUGCONF removed from database clusters and STN |
| NEWS 11 | DEC 17 | DGENE now includes more than 10 million sequences |
| NEWS 12 | DEC 17 | TOXCENTER enhanced with 2008 MeSH vocabulary in MEDLINE segment |
| NEWS 13 | DEC 17 | MEDLINE and LMEDLINE updated with 2008 MeSH vocabulary |
| NEWS 14 | DEC 17 | CA/CAplus enhanced with new custom IPC display formats |
| NEWS 15 | DEC 17 | STN Viewer enhanced with full-text patent content from USPATOLD |
| NEWS 16 | JAN 02 | STN pricing information for 2008 now available |
| NEWS 17 | JAN 16 | CAS patent coverage enhanced to include exemplified prophetic substances |
| NEWS 18 | JAN 28 | USPATFULL, USPAT2, and USPATOLD enhanced with new custom IPC display formats |
| NEWS 19 | JAN 28 | MARPAT searching enhanced |
| NEWS 20 | JAN 28 | USGENE now provides USPTO sequence data within 3 days of publication |
| NEWS 21 | JAN 28 | TOXCENTER enhanced with reloaded MEDLINE segment |
| NEWS 22 | JAN 28 | MEDLINE and LMEDLINE reloaded with enhancements |
| NEWS 23 | FEB 08 | STN Express, Version 8.3, now available |
| NEWS 24 | FEB 20 | PCI now available as a replacement to DPCI |
| NEWS 25 | FEB 25 | IFIREF reloaded with enhancements |
| NEWS 26 | FEB 25 | IMSPRODUCT reloaded with enhancements |
| NEWS 27 | FEB 29 | WPINDEX/WPIDS/WPIX enhanced with ECLA and current U.S. National Patent Classification |

NEWS EXPRESS FEBRUARY 08 CURRENT WINDOWS VERSION IS V8.3,
AND CURRENT DISCOVER FILE IS DATED 20 FEBRUARY 2008

FOR 10559534 by Cynthia Hamilton

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 NEWS HOURS     STN Operating Hours Plus Help Desk Availability
 NEWS LOGIN     Welcome Banner and News Items
 NEWS IPC8      For general information regarding STN implementation of IPC 8

Enter NEWS followed by the item number or name to see news on that
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* * * * * * * * * * * * * * * * STN  Columbus  * * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 20:31:49 ON 14 MAR 2008

=> file reg
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     0.21       0.21

FILE 'REGISTRY' ENTERED AT 20:32:00 ON 14 MAR 2008
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Property values tagged with IC are from the ZIC/VINITI data file
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STRUCTURE FILE UPDATES:   13 MAR 2008  HIGHEST RN 1007849-81-1
DICTIONARY FILE UPDATES:  13 MAR 2008  HIGHEST RN 1007849-81-1

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TSCA INFORMATION NOW CURRENT THROUGH January 9, 2008.

  Please note that search-term pricing does apply when
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REGISTRY includes numerically searchable data for experimental and
predicted properties as well as tags indicating availability of
experimental property data in the original document.  For information
on property searching in REGISTRY, refer to:

http://www.cas.org/support/stngen/stndoc/properties.html

=> s dimethylhexane and dimethacrylate
           292 DIMETHYLHEXANE
          4926 DIMETHACRYLATE
L1           0 DIMETHYLHEXANE AND DIMETHACRYLATE

=> s dimethylhexane and diacrylate
           292 DIMETHYLHEXANE
          4106 DIACRYLATE
```

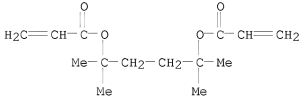
L2 2 DIMETHYLHEXANE AND DIACRYLATE

=> d 1-2

L2 ANSWER 1 OF 2 REGISTRY COPYRIGHT 2008 ACS on STN
RN 220767-20-4 REGISTRY
ED Entered STN: 28 Mar 1999
CN 2-Propenoic acid, 1,1,4,4-tetramethyl-1,4-butanediyl ester, polymer with 1-(1,1-dimethylethoxy)-4-ethenylbenzene and 4-ethenylphenol (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Benzene, 1-(1,1-dimethylethoxy)-4-ethenyl-, polymer with 4-ethenylphenol and 1,1,4,4-tetramethyl-1,4-butanediyl di-2-propenoate (9CI)
CN Phenol, 4-ethenyl-, polymer with 1-(1,1-dimethylethoxy)-4-ethenylbenzene and 1,1,4,4-tetramethyl-1,4-butanediyl di-2-propenoate (9CI)
OTHER NAMES:
CN 4-tert-Butoxystyrene-2,5-dimethyl-2,5-hexanediol diacrylate-4-hydroxystyrene copolymer
CN p-tert-Butoxystyrene-2,5-dimethyl-2,5-hexanediol diacrylate-p-hydroxystyrene copolymer
CN p-tert-Butoxystyrene-2,5-dimethylhexane-2,5-diacrylate-p-hydroxystyrene copolymer
CN p-tert-Butoxystyrene-p-hydroxystyrene-2,5-dimethyl-2,5-hexanediol diacrylate copolymer
MF (C14 H22 O4 . C12 H16 O . C8 H8 O)x
CI PMS
PCT Polyacrylic, Polystyrene
SR CA
LC STN Files: CA, CAPLUS, CHEMLIST, USPAT2, USPATFULL

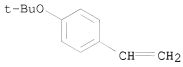
CM 1

CRN 188837-15-2
CMF C14 H22 O4



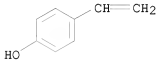
CM 2

CRN 95418-58-9
CMF C12 H16 O




CM 3

CRN 2628-17-3
CMF C8 H8 O




**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

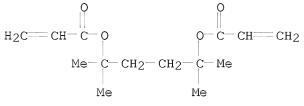
5 REFERENCES IN FILE CA (1907 TO DATE)
5 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L2 ANSWER 2 OF 2 REGISTRY COPYRIGHT 2008 ACS on STN
RN 220767-18-0 REGISTRY
ED Entered STN: 28 Mar 1999
CN 2-Propenoic acid, 1,1,4,4-tetramethyl-1,4-butanediyl ester, polymer with 1,1-dimethylethyl 2-propenoate, ethenylbenzene and 4-ethenylphenol (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with ethenylbenzene, 4-ethenylphenol and 1,1,4,4-tetramethyl-1,4-butanediyl di-2-propenoate (9CI)
CN Benzene, ethenyl-, polymer with 1,1-dimethylethyl 2-propenoate, 4-ethenylphenol and 1,1,4,4-tetramethyl-1,4-butanediyl di-2-propenoate (9CI)
CN Phenol, 4-ethenyl-, polymer with 1,1-dimethylethyl 2-propenoate, ethenylbenzene and 1,1,4,4-tetramethyl-1,4-butanediyl di-2-propenoate (9CI)
OTHER NAMES:
CN tert-Butyl acrylate-2,5-dimethyl-2,5-hexanediol diacrylate-p-hydroxystyrene-styrene copolymer
CN tert-Butyl acrylate-2,5-dimethylhexane-2,5-diacrylate-p-hydroxystyrene-styrene copolymer
MF (C14 H22 O4 . C8 H8 O . C8 H8 . C7 H12 O2)x
CI PMS
PCT Polyacrylic, Polystyrene
SR CA
LC STN Files: CA, CAPLUS, USPATFULL

CM 1

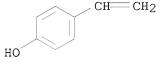
FOR 10559534 by Cynthia Hamilton

CRN 188837-15-2
CMF C14 H22 O4



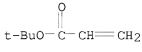
CM 2

CRN 2628-17-3
CMF C8 H8 O



CM 3

CRN 1663-39-4
CMF C7 H12 O2



CM 4

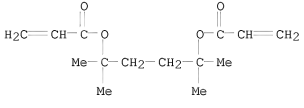
CRN 100-42-5
CMF C8 H8

3 REFERENCES IN FILE CA (1907 TO DATE)
3 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> s 188837-15-2
L3 1 188837-15-2
(188837-15-2/RN)

=> d

L3 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN
RN 188837-15-2 REGISTRY
ED Entered STN: 07 May 1997
CN 2-Propenoic acid, 1,1'-(1,1,4,4-tetramethyl-1,4-butanediyl) ester (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN 2-Propenoic acid, 1,1,4,4-tetramethyl-1,4-butanediyl ester (9CI)
MF C14 H22 O4
CI COM
SR CA
LC STN Files: CA, CAPLUS, TOXCENTER, USPAT2, USPATFULL



**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

14 REFERENCES IN FILE CA (1907 TO DATE)
2 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
14 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> s dimethyl and hexanediol and diacrylate
5483618 DIMETHYL
27667 HEXANEDIOL
4106 DIACRYLATE
L4 122 DIMETHYL AND HEXANEDIOL AND DIACRYLATE

=> s dimethyl and hexanediol and diacrylate
5483618 DIMETHYL
27667 HEXANEDIOL
4106 DIACRYLATE
L5 122 DIMETHYL AND HEXANEDIOL AND DIACRYLATE

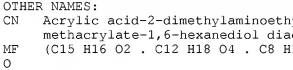
=> d 122

L5 ANSWER 122 OF 122 REGISTRY COPYRIGHT 2008 ACS on STN
RN 62569-30-6 REGISTRY
ED Entered STN: 16 Nov 1984
CN 2-Propenoic acid, 2-methyl-, 2-(dimethylamino)ethyl ester, polymer with (chloromethyl)oxirane, 1,6-hexanediyl di-2-propenoate, 1,3-isobenzofurandione, 4,4'-(1-methylethylidene)bis[phenol], oxiranylmethyl 2-methyl-2-propenoate and 2-propenoic acid (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:
CN 1,3-Isobenzofurandione, polymer with (chloromethyl)oxirane, 2-(dimethylamino)ethyl 2-methyl-2-propenoate, 1,6-hexanediyl di-2-propenoate, 4,4'-(1-methylethylidene)bis[phenol], oxiranylmethyl 2-methyl-2-propenoate and 2-propenoic acid (9CI)
CN 2-Propenoic acid, 1,6-hexanediyl ester, polymer with (chloromethyl)oxirane, 2-(dimethylamino)ethyl 2-methyl-2-propenoate, 1,3-isobenzofurandione, 4,4'-(1-methylethylidene)bis[phenol], oxiranylmethyl 2-methyl-2-propenoate and 2-propenoic acid (9CI)
CN 2-Propenoic acid, 2-methyl-, oxiranylmethyl ester, polymer with (chloromethyl)oxirane, 2-(dimethylamino)ethyl 2-methyl-2-propenoate, 1,6-hexanediyl di-2-propenoate, 1,3-isobenzofurandione, 4,4'-(1-methylethylidene)bis[phenol] and 2-propenoic acid (9CI)
CN 2-Propenoic acid, polymer with (chloromethyl)oxirane, 2-(dimethylamino)ethyl 2-methyl-2-propenoate, 1,6-hexanediyl di-2-propenoate, 1,3-isobenzofurandione, 4,4'-(1-methylethylidene)bis[phenol] and oxiranylmethyl 2-methyl-2-propenoate (9CI)
CN Oxirane, (chloromethyl)-, polymer with 2-(dimethylamino)ethyl 2-methyl-2-propenoate, 1,6-hexanediyl di-2-propenoate, 1,3-isobenzofurandione, 4,4'-(1-methylethylidene)bis[phenol], oxiranylmethyl 2-methyl-2-propenoate and 2-propenoic acid (9CI)
CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane, 2-(dimethylamino)ethyl 2-methyl-2-propenoate, 1,6-hexanediyl di-2-propenoate, 1,3-isobenzofurandione, oxiranylmethyl 2-methyl-2-propenoate and 2-propenoic acid (9CI)
OTHER NAMES:
CN Acrylic acid-2-dimethylaminoethyl methacrylate-Epikote 828-glycidyl methacrylate-1,6-hexanediol diacrylate-phthalic anhydride copolymer
MF (C15 H16 O2 . C12 H18 O4 . C8 H15 N O2 . C8 H4 O3 . C7 H10 O3 . C3 H5 Cl O
. C3 H4 O2)x
CI PMS
PCT Epoxy resin, Polyacrylic, Polyester, Polyester formed
LC STN Files: CA, CAPLUS

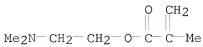
CM 1

CRN 13048-33-4
CMF C12 H18 O4



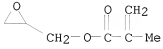
CM 2

CRN 2867-47-2
CMF C8 H15 N O2



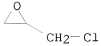
CM 3

CRN 106-91-2
CMF C7 H10 O3



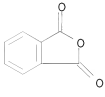
CM 4

CRN 106-89-8
CMF C3 H5 Cl O



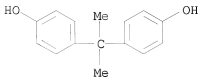
CM 5

CRN 85-44-9
CMF C8 H4 O3



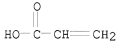
CM 6

CRN 80-05-7
CMF C15 H16 O2



CM 7

CRN 79-10-7
CMF C3 H4 O2

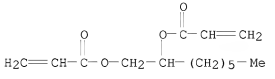


1 REFERENCES IN FILE CA (1907 TO DATE)
1 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> s C14H22O4/mf and diacrylate
2897 C14H22O4/MF
4106 DIACRYLATE
L6 2 C14H22O4/MF AND DIACRYLATE

=> d 1-2

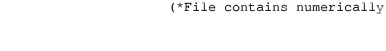
L6 ANSWER 1 OF 2 REGISTRY COPYRIGHT 2008 ACS on STN
RN 160893-26-5 REGISTRY
ED Entered STN: 16 Feb 1995
CN 2-Propenoic acid, 1-hexyl-1,2-ethanediyl ester (9CI) (CA INDEX NAME)
OTHER NAMES:
CN 1,2-Octamethylene diacrylate
MF C14 H22 O4
SR CA
LC STN Files: CA, CAPLUS



**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

1 REFERENCES IN FILE CA (1907 TO DATE)
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L6 ANSWER 2 OF 2 REGISTRY COPYRIGHT 2008 ACS on STN
RN 10526-04-2 REGISTRY
ED Entered STN: 16 Nov 1984
CN 2-Propenoic acid, 1,1'-(1,8-octanediyl) ester (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN 2-Propenoic acid, 1,8-octanediyl ester (9CI)
CN Acrylic acid, octamethylene ester (7CI, 8CI)
OTHER NAMES:
CN 1,8-Octamethylene diacrylate
CN 1,8-Octanediol diacrylate
CN Octamethylene diacrylate
MF C14 H22 O4
CI COM
LC STN Files: BEILSTEIN*, CA, CAOLD, CAPLUS, CASREACT, IFICDB, IFIUDB, TOXCENTER, USPAT2, USPATFULL
(*File contains numerically searchable property data)



**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

21 REFERENCES IN FILE CA (1907 TO DATE)
3 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
21 REFERENCES IN FILE CAPLUS (1907 TO DATE)
1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> file ca

| COST IN U.S. DOLLARS | SINCE FILE ENTRY | TOTAL SESSION |
|---|---|---|
| FULL ESTIMATED COST | 76.56 | 76.77 |

FILE 'CA' ENTERED AT 20:35:52 ON 14 MAR 2008
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.


FILE COVERS 1907 - 13 Mar 2008 VOL 148 ISS 12

FOR 10559534 by Cynthia Hamilton

FILE LAST UPDATED: 13 Mar 2008 (20080313/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d his

(FILE 'HOME' ENTERED AT 20:31:49 ON 14 MAR 2008)

FILE 'REGISTRY' ENTERED AT 20:32:00 ON 14 MAR 2008
L1 0 S DIMETHYLHEXANE AND DIMETHACRYLATE
L2 2 S DIMETHYLHEXANE AND DIACRYLATE
L3 1 S 188837-15-2
L4 122 S DIMETHYL AND HEXANEDIOL AND DIACRYLATE
L5 122 S DIMETHYL AND HEXANEDIOL AND DIACRYLATE
L6 2 S C14H22O4/MF AND DIACRYLATE

FILE 'CA' ENTERED AT 20:35:52 ON 14 MAR 2008

=> d l3
YOU HAVE REQUESTED DATA FROM FILE 'REGISTRY' - CONTINUE? (Y)/N:n

=> s l3
L7 14 L3

=> d all 1-14

L7 ANSWER 1 OF 14 CA COPYRIGHT 2008 ACS on STN
AN 148:202003 CA
ED Entered STN: 21 Feb 2008
TI Design of Reversible Cross-Linkers for Step and Flash Imprint Lithography Imprint Resists
AU Palmieri, Frank; Adams, Jacob; Long, Brian; Heath, William; Tsiartas, Pavlos; Willson, C. Grant
CS Department of Chemical Engineering, The University of Texas at Austin, Austin, TX, 78712, USA
SO ACS Nano (2007), 1(4), 307-312
CODEN: ANCAC3; ISSN: 1936-0851
PB American Chemical Society
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Step and flash imprint lithog. is a low-cost, nanoimprint lithog. process that generates nanopatterned polymeric films via the photopolymn. of low-viscosity solns. containing crosslinking monomers in a transparent template (mold). The highly crosslinked imprint materials are completely insol. in all inert solvents, which poses a problem for reworking wafers with faulty imprints and cleaning templates contaminated with cured imprint resist. Degradable crosslinkers provide a means of stripping crosslinked polymer networks. The controlled degradation of polymers containing

acetal- and tertiary ester-based crosslinkers is demonstrated here. The viscosity and dose to cure are presented for several prepolymer formulations, along with imprint resolution and tensile modulus results for the cured polymers. Optimum conditions for de-crosslinking and stripping of the crosslinked polymers are presented, including demonstrations of their utility.

ST degrdn polymer acetal ester based crosslinker nanoimprint lithog resist; resist formulation crosslinker step flash imprint lithog

IT Photoresists
(degradable crosslinking monomers for step-and-flash imprint lithog. resist formulations)

IT Crosslinking agents
Young's modulus
(degradable crosslinking monomers for step-and-flash imprint lithog. resist formulations that are strippable and reworkable)

IT Lithography
(nano-, imprint, step-and-flash; degradable crosslinking monomers for step-and-flash imprint lithog. resist formulations that are strippable and reworkable)

IT Crosslinking
(photochem.; degradable crosslinking monomers for step-and-flash imprint lithog. resist formulations that are strippable and reworkable)

IT Polymerization
(photopolymn.; degradable crosslinking monomers for step-and-flash imprint lithog. resist formulations that are strippable and reworkable)

IT 188837-15-2, reactions 1003196-88-0
RL: PEP (Physical, engineering or chemical process); PRP (Properties); RCT
(Reactant); PROC (Process); RACT (Reactant or reagent)
(monomer, resist formulation; degradable crosslinking monomers for step-and-flash imprint lithog. resist formulations that are strippable and reworkable)

IT 7473-98-5, 2-Hydroxy-2-methyl-1-phenyl-1-propanone
RL: CAT (Catalyst use); USES (Uses)
(resist formulation; degradable crosslinking monomers for step-and-flash imprint lithog. resist formulations that are strippable and reworkable)

IT 101-43-9, Cyclohexyl methacrylate 106-63-8, Isobutyl acrylate
RL: PEP (Physical, engineering or chemical process); PRP (Properties); RCT
(Reactant); PROC (Process); RACT (Reactant or reagent)
(resist formulation; degradable crosslinking monomers for step-and-flash imprint lithog. resist formulations that are strippable and reworkable)

IT 76-05-1, Trifluoroacetic acid, uses 108-10-1, 4-Methyl-2-pentanone
RL: NUU (Other use, unclassified); USES (Uses)
(stripping solution; degradable crosslinking monomers for step-and-flash imprint lithog. resist formulations that are strippable and reworkable)

RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L7 ANSWER 2 OF 14 CA COPYRIGHT 2008 ACS on STN
AN 147:542837 CA
ED Entered STN: 13 Dec 2007
TI Radically curable adhesive compositions with good repair property, circuit connection materials, connected members, and semiconductor devices
IN Katogi, Shigeki
PA Hitachi Chemical Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 22pp.
CODEN: JKXXAF
DT Patent
LA Japanese
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2007297579 | A | 20071115 | JP 2006-178590 | 20060628 |
| PRAI JP 2006-104090 | A | 20060405 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2007297579 | IPCI | C09J0004-00 [I,A]; C09J0009-02 [I,A]; C09J0009-00 |

[I,C*]; H01B0001-22 [I,A]; H01L0021-60 [I,A]; H01L0021-02 [I,C*]; H05K0003-36 [I,A]; H05K0003-32 [I,A]

IPCR C09J0004-00 [I,C]; C09J0004-00 [I,A]; C09J0009-00 [I,C]; C09J0009-02 [I,A]; H01B0001-22 [I,C]; H01B0001-22 [I,A]; H01L0021-02 [I,C]; H01L0021-60 [I,A]; H05K0003-32 [I,C]; H05K0003-32 [I,A]; H05K0003-36 [I,C]; H05K0003-36 [I,A]

FTERM 4J040/DC071; 4J040/DC072; 4J040/DF031; 4J040/DF032; 4J040/EE001; 4J040/EE002; 4J040/EE051; 4J040/EE052; 4J040/EE061; 4J040/EE062; 4J040/EF001; 4J040/EF002; 4J040/EG001; 4J040/EG002; 4J040/EH031; 4J040/EH032; 4J040/EL001; 4J040/EL002; 4J040/FA131; 4J040/FA132; 4J040/FA281; 4J040/FA282; 4J040/HA026; 4J040/HA066; 4J040/HB14; 4J040/HB41; 4J040/HC14; 4J040/HD23; 4J040/KA12; 4J040/KA32; 4J040/LA09; 4J040/NA19; 4J040/NA20; 5E319/AA03; 5E319/AB05; 5E319/AC11; 5E319/BB12; 5E319/BB16; 5E319/CC03; 5E319/GG15; 5E344/AA02; 5E344/AA22; 5E344/BB02; 5E344/CC13; 5E344/CC21; 5E344/CD04; 5E344/CD05; 5E344/EE21; 5F044/LL09; 5F044/NN12; 5F044/NN19; 5G301/DA03; 5G301/DA05; 5G301/DA06; 5G301/DA10; 5G301/DA18; 5G301/DA42; 5G301/DD03; 5G301/DE01

AB The adhesive compns. contain (a) thermoplastic resins, (b) radically polymerizable compds. having ≥2 (meth)acryloyloxy groups a part of or all of which are forming direct bonds or secondary carbon or tertiary carbon, and (c) radical polymerization initiators. Optionally, the adhesive compns. further contain (a) vinyl compds. bearing phosphoric acid groups 0.1-20 parts per 100 parts of the thermoplastic resins. Optionally, the adhesive compns. further contain elec. conductive particles. Circuit members having circuit electrodes are connected elec. with the circuit electrodes by using the adhesive compns. The semiconductor device comprises (i) a substrate having a circuit electrode on the mounting surface and a semiconductor element mounted on the substrate and elec. connected with the circuit electrode via (iii) the connector comprising cured articles of the adhesive compns. Thus, 10.00 g 2,5-dimethyl-2,5-hexanediol was reacted with 14.85 g acryloyl chloride in THF in the presence of Et3N and 4-dimethylaminopyridine to give 7.78 g of an oil with 2 acryloyloxy groups directly bonded to tertiary carbon, 5 parts of which was mixed with a MEK solution of PKHC (phenoxy resin) 87.5 (resin 35 parts), poly(butylene adipate) diol-polyoxytetramethylene glycol-1,4-butylene glycol-diphenylmethane diisocyanate copolymer (Mw 1.5 + 105) 15, Hitaloid 4861 (polyfunctional urethane acrylate) 45, and Light Ester P 2M [2-(meth)acryloyloxyethyl phosphate] 5, and Perhexyl O (tert-hexylperoxy 2-ethylhexanoate) 3 parts. The obtained solution was mixed with elec. conductive metal-coated polystyrene particles (Au/Ni/polystyrene particle, average particle diameter 4 μm) to give elec. conductive adhesive composition with content of conductive particles 1.5 volume%. The adhesive composition was applied on a fluoropolymer film and dried at 70° for 10 min to give

a 15-μm thick film-type circuit connection material, which was disposed between a flexible printed circuit board and a thin-film ITO-coated glass substrate and hot-pressed at 160° to give a connector showing connection resistance 1.6 Ω, adhesion strength (90° peel) 680 N/m, and easy removal from the ITO substrate.

ST elec conductive adhesive film acryloyloxy compd; phenoxy resin adhesive film elec packaging; semiconductor device adhesive film circuit connection; polyurethane adhesive film elec packaging

IT Adhesive films
(elec. conductive; radically curable adhesive compns. containing thermoplastic reins for circuit bonding films)

IT Printed circuit boards
(flexible, laminate with; radically curable adhesive compns. containing
thermoplastic reins for circuit bonding films)

IT Polyurethanes, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyester-polyoxyalkylene-, block; radically curable adhesive compns. containing thermoplastic reins for circuit bonding films)

IT Electronic packaging materials
(radically curable adhesive compns. containing thermoplastic reins for circuit bonding films)

IT Phenoxy resins
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(radically curable adhesive compns. containing thermoplastic reins for circuit bonding films)

IT Glass substrates
(with ITO layer, laminate with; radically curable adhesive compns. containing thermoplastic reins for circuit bonding films)

IT 7440-02-0, Nickel, uses 7440-57-5, Gold, uses 9003-53-6, Polystyrene
RL: TEM (Technical or engineered material use); USES (Uses)
(Au/Ni/polystyrene elec. conductive particle; radically curable adhesive compns. containing thermoplastic reins for circuit bonding films)

IT 110680-75-6P
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(assumed monomers; radically curable adhesive compns. containing thermoplastic reins for circuit bonding films)

IT 956699-55-1P 956699-56-2P 956699-57-3P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(crosslinked; radically curable adhesive compns. containing thermoplastic
reins for circuit bonding films)

IT 50926-11-9, ITO
RL: TEM (Technical or engineered material use); USES (Uses)
(layer on glass substrate, laminate with; radically curable adhesive compns. containing thermoplastic reins for circuit bonding films)

IT 137791-98-1, Perhexyl O
RL: CAT (Catalyst use); USES (Uses)
(radically curable adhesive compns. containing thermoplastic reins for circuit bonding films)

IT 188837-15-2P, uses
RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(radically curable adhesive compns. containing thermoplastic reins for circuit bonding films)
IT 25068-38-6, PKHC
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(radically curable adhesive compns. containing thermoplastic reins for circuit bonding films)
IT 52496-08-9, APG 400 52628-03-2, Light Ester P 2M 61722-28-9, Light Acrylate BP 4PA 956595-72-5, Hitaloid 4861
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(radically curable adhesive compns. containing thermoplastic reins for circuit bonding films)

L7 ANSWER 3 OF 14 CA COPYRIGHT 2008 ACS on STN
AN 145:302806 CA
ED Entered STN: 28 Sep 2006
TI Chemical amplification-type positive-working resist composition containing
star copolymer and method of forming resist pattern
IN Takayama, Toshikazu
PA Tokyo Ohka Kogyo Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 26pp.
CODEN: JKXXAF
DT Patent
LA Japanese
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2006227532 | A | 20060831 | JP 2005-44597 | 20050221 |
| PRAI JP 2005-44597 | | 20050221 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2006227532 | IPCI | G03F0007-039 [I,A]; C08F0212-08 [I,A]; C08F0212-00 [I,C*]; C08F0222-10 [I,A]; C08F0222-00 [I,C*]; H01L0021-027 [I,A]; H01L0021-02 [I,C*] |
| | IPCR | G03F0007-039 [I,C]; G03F0007-039 [I,A]; C08F0212-00 [I,C]; C08F0212-08 [I,A]; C08F0222-00 [I,C]; C08F0222-10 [I,A]; H01L0021-02 [I,C]; H01L0021-027 [I,A] |
| | FTERM | 2H025/AA01; 2H025/AA02; 2H025/AB16; 2H025/AC04; 2H025/AC08; 2H025/AD03; 2H025/BE00; 2H025/BE10; 2H025/BG00; 2H025/BJ10; 2H025/CB14; 2H025/CB17; 2H025/CB41; 2H025/FA12; 4J100/AB07P; 4J100/AL08Q; 4J100/AL62R; 4J100/BA03P; 4J100/BC04Q; 4J100/BC09Q; 4J100/CA05; 4J100/JA38 |

AB Disclosed is a chemical amplification-type pos.-working resist composition

comprising (a) a resin increasing its alkali solubility upon interaction with acid and (b) a photoacid, wherein the resin is a star copolymer with the arm made up of an alkenyl phenol having an ethylenic bond and an acrylate derivative and the core made up of a diacrylate derivative

ST chem amplification pos working resist compn photoresist star copolymer; acrylate alkenylphenol diacrylate

IT Photoresists
(Chemical amplification-type pos.-working resist composition containing star copolymer)

IT 188837-15-2DP, star copolymer
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(core; Chemical amplification-type pos.-working resist composition containing star copolymer)

IT 871677-01-9P, 4-(2-Ethoxyethoxy)styrene-styrene copolymer 900806-20-4P, 1-Ethylcyclohexyl methacrylate homopolymer 907590-83-4P, 4-(2-Ethoxyethoxy)styrene-1-ethylcyclohexyl methacrylate copolymer 907590-85-6P, 1-Adamantyl methacrylate-4-(2-Ethoxyethoxy)styrene-styrene copolymer 907590-86-7P 907590-87-8P
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(star; Chemical amplification-type pos.-working resist composition containing star copolymer)

L7 ANSWER 4 OF 14 CA COPYRIGHT 2008 ACS on STN
AN 145:272436 CA
ED Entered STN: 21 Sep 2006
TI Phenol-based star polymers with narrow molecular weight distribution
IN Nakamura, Mitsuhiro; Kubo, Hideo; Shimotori, Takeshi
PA Nippon Soda Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 18pp.
CODEN: JKXXAF
DT Patent
LA Japanese
CC 37-3 (Plastics Manufacture and Processing)
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2006225605 | A | 20060831 | JP 2005-44378 | 20050221 |
| PRAI JP 2005-44378 | | 20050221 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2006225605 | IPCI | C08F0265-06 [I,A]; C08F0265-00 [I,C*] |
| | IPCR | C08F0265-00 [I,C]; C08F0265-06 [I,A] |
| | FTERM | 4J026/AA46; 4J026/BA05; 4J026/BA06; 4J026/BA27; 4J026/DA02; 4J026/DA03; 4J026/DA18; 4J026/DB02; 4J026/DB18; 4J026/FA07; 4J026/GA01 |

AB The polymers, useful for ESCAP-type resists, consist of cores containing polymer chains consisting of H2C:CR4CO2CR5R6R7CR9R10OCOC(R8):CH2-derived unit (R4, R8 = H, Me; R5, R6, R9, R10 = alkyl; R7 = alkylene) and arms,

which are polymer chains containing HO-p-C6H4C(R1):CH2-derived unit (R = H, Me) and H2C:CR2CO2R3-derived unit (R2 = H, Me; R3 = alicyclic hydrocarbon bonded by tertiary carbon). Thus, adding 41.6 g 4-(2-ethoxyethoxy)styrene to a THF/hexane mixture containing BuLi at -40°, terminating the reaction by MeOH, cooling the reaction system to -60°, adding THF containing LiCl and 5.3 g 1-ethylcyclohexyl methacrylate, terminating the reaction by MeOH, further adding 6.9 g 2,5-dimethylhexyl 2,5-diacrylate to the mixture, precipitating polymer in MeOH, filtering, washing, and drying gave 53 g polymer with Mn 29,000 in star polymer parts and 7100 in arm polymer parts and Mw/Mn 1.17 and 1.15, resp. It was dissolved in THF, hydrolyzed with HCl, filtered, washed, and dried to give 38 g polymer with Mn 24,000 in star polymer parts and 5600 in arm polymer parts and Mw/Mn 1.18 and 1.14, resp.

ST hydroxystyrene ethylcyclohexyl methacrylate star polymer dimethylhexyl diacrylate core

IT Polymers, preparation
RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)
(star-branched; phenol-based star polymers with narrow mol. weight distribution)

IT 131787-39-8 188837-15-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(core; phenol-based star polymers with narrow mol. weight distribution)

IT 907590-83-4DP, hydrolyzed 907590-84-5DP, hydrolyzed 907590-85-6DP, hydrolyzed 907590-86-7DP, hydrolyzed 907590-87-8DP, hydrolyzed
RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)
(star, arms; phenol-based star polymers with narrow mol. weight distribution)

L7 ANSWER 5 OF 14 CA COPYRIGHT 2008 ACS on STN
AN 145:58810 CA
ED Entered STN: 13 Jul 2006
TI Solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells
IN Tanaka, Yasunobu; Castello, Chris P.; Yu, Lei
PA Nitto Denko Corp., Japan
SO PCT Int. Appl., 41 pp.
CODEN: PIXXD2
DT Patent
LA English
CC 9-2 (Biochemical Methods)
Section cross-reference(s): 3, 16
FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | WO 2006066001 | A2 | 20060622 | WO 2005-US45429 | 20051214 |
| | WO 2006066001 | A3 | 20060908 | | |

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR,

KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

| | | | | | |
|---|---|---|---|---|---|
| AU | 2005316501 | A1 | 20060622 | AU 2005-316501 | 20051214 |
| CA | 2590820 | A1 | 20060622 | CA 2005-2590820 | 20051214 |
| EP | 1836293 | A2 | 20070926 | EP 2005-854197 | 20051214 |
| | R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR | | | | |
| CN | 101124316 | A | 20080213 | CN 2005-80043453 | 20070618 |
| KR | 2007101859 | A | 20071017 | KR 2007-715797 | 20070710 |
| PRAI US | 2004-637344P | P | 20041217 | | |
| WO | 2005-US45429 | W | 20051214 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| WO 2006066001 | IPCI | C12M0001-16 [I,A]; C12M0003-00 [I,A]; C12M0001-16 [I,C]; C12M0003-00 [I,C]; C12M0001-16 [I,A]; C12M0003-00 [I,A] |
| | IPCR | C12M0001-16 [I,A]; C12M0001-16 [I,C]; C12M0003-00 [I,C]; C12M0003-00 [I,A] |
| | ECLA | C12N005/00S |
| AU 2005316501 | IPCI | C12M0001-16 [I,C]; C12M0001-16 [I,A]; C12M0003-00 [I,C]; C12M0003-00 [I,A] |
| | IPCR | C12M0001-16 [I,C]; C12M0001-16 [I,A]; C12M0003-00 [I,C]; C12M0003-00 [I,A] |
| | NCL | 435/455.000; 435/285.200; 435/468.000 |
| | ECLA | C12N005/00S; M12N; M12N |
| CA 2590820 | IPCI | C12M0001-16 [I,A]; C12M0003-00 [I,A] |
| | IPCR | C12M0001-16 [I,C]; C12M0001-16 [I,A]; C12M0003-00 [I,C]; C12M0003-00 [I,A] |
| | NCL | 435/455.000; 435/285.200; 435/468.000 |
| | ECLA | C12N005/00S; M12N; M12N |
| EP 1836293 | IPCI | C12M0001-16 [I,A]; C12M0003-00 [I,A] |
| | IPCR | C12M0001-16 [I,C]; C12M0001-16 [I,A]; C12M0003-00 [I,C]; C12M0003-00 [I,A] |
| | ECLA | C12N005/00S; M12N; M12N |
| CN 101124316 | IPCI | C12M0001-16 [I,A]; C12M0003-00 [I,A] |
| KR 2007101859 | IPCI | C12M0003-00 [I,A] |

AB A cell transfection/culture device is disclosed which includes a solid support coated with a degradable polymer cation as a transfection reagent.

The transfection/culture device is conveniently stored at room temperature until use. Cell transfection is accomplished easily by adding the nucleic acid of interest and the cells to be transfected to the transfection/culture device. Cell transfection is completed in less than one hour by using the transfection/culture device described herein.

ST cationic polymer immobilized cell transfection

IT Animal cell line
(293; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Animal cell line
(705; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Animal cell line
(A549; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Animal cell line
(CHO; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Animal cell line
(COS-7; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Animal cell line
(CV-1; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Animal cell line
(DU-145; solid surface with immobilized degradable cationic polymer for
transfecting eukaryotic cells)
IT Animal cell line
(HT-1080; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Animal cell line
(Hep G2; solid surface with immobilized degradable cationic polymer for
transfecting eukaryotic cells)
IT Animal cell line
(MDCK; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Acid halides
RL: BUU (Biological use, unclassified); TEM (Technical or engineered material use); BIOL (Biological study); USES (Uses)
(acid chlorides, dimers and multimers of, as a linker; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Immobilization, molecular or cellular
(biochem.; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Polyelectrolytes
(cationic; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Polysaccharides, biological studies
Proteins
RL: BSU (Biological study, unclassified); TEM (Technical or engineered material use); BIOL (Biological study); USES (Uses)
(cationic; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Human
(cell lines; solid surface with immobilized degradable cationic polymer
for transfecting eukaryotic cells)
IT Sulfonyl halides

RL: BUU (Biological use, unclassified); TEM (Technical or engineered material use); BIOL (Biological study); USES (Uses)
(chlorides, dimers and multimers of, as a linker; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Aldehydes, biological studies
Anhydrides
Carboxylic acids, biological studies
Epoxides
Halides
Isocyanates
Isothiocyanates
RL: BUU (Biological use, unclassified); TEM (Technical or engineered material use); BIOL (Biological study); USES (Uses)
(dimers and multimers of, as a linker; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Gene, animal
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(egfp; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Proteins
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(green fluorescent, enhanced; solid surface with immobilized degradable
cationic polymer for transfecting eukaryotic cells)
IT Gene, animal
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(luc; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Animal cell
(mammalian; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Animal tissue culture
Cell division
Cytotoxicity
HeLa cell
Linking agents
Microtiter plates
Plant cell
Plasmid vectors
Polymerization
Stem cell
Storage
(solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Double stranded RNA
Nucleic acids
Ribozymes
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Epoxy resins, biological studies
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(solid surface with immobilized degradable cationic polymer for

transfecting eukaryotic cells)
IT Glass, biological studies
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Transformation, genetic
(transfection; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT Polyesters, biological studies
RL: BUU (Biological use, unclassified); TEM (Technical or engineered material use); BIOL (Biological study); USES (Uses)
(with at least three acrylate or acrylamide side groups; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT 1070-70-8, 1,4-Butanediol diacrylate 4986-89-4, Pentaerythritol tetraacrylate 13048-33-4, 1,6-Hexanediol diacrylate 15625-89-5, Trimethylolpropane triacrylate 19485-03-1, 1,3-Butanediol diacrylate 26570-48-9, Polyethylene glycol diacrylate 60506-81-2, DiPentaerythritol
pentaacrylate 94108-97-1, Di(trimethylolpropane) tetraacrylate 184223-36-7, 2,4-Pentanediol diacrylate 188837-15-2 188837-17-4
RL: BUU (Biological use, unclassified); TEM (Technical or engineered material use); BIOL (Biological study); USES (Uses)
(as a linker; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT 26937-01-9, PAMAM
RL: BSU (Biological study, unclassified); TEM (Technical or engineered material use); BIOL (Biological study); USES (Uses)
(dendritic; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT 79-06-1, Acrylamide, biological studies 79-10-7, Acrylic acid, biological studies 541-59-3, Maleimide 6066-82-6D, N-Hydroxysuccinimide, esters
RL: BUU (Biological use, unclassified); TEM (Technical or engineered material use); BIOL (Biological study); USES (Uses)
(dimers and multimers of, as a linker; solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT 144189-73-1, DOTAP 344612-27-7, LipofectAMINE 2000 762293-77-6, JetPEI
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT 9002-98-6
RL: BSU (Biological study, unclassified); CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); TEM (Technical or engineered material use); BIOL (Biological study); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT 26338-45-4P
RL: BSU (Biological study, unclassified); SPN (Synthetic preparation); TEM
(Technical or engineered material use); BIOL (Biological study); PREP

(Preparation); USES (Uses)
(solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT 56-18-8, N-(3-Aminopropyl)-1,3-propanediamine 71-44-3, Spermine 124-20-9, Spermidine 140-31-8, N-(2-Aminoethyl)piperazine 4097-89-6, Tri(2-aminoethyl)amine 4741-99-5, N,N'-Bis(2-aminoethyl)-1,3-propanediamine 7209-38-3, 1,4-Bis(3-aminopropyl)piperazine 9003-53-6, Polystyrene 9012-76-4, Chitosan 13531-52-7, N-(2-Aminoethyl)-1,3-propanediamine 25037-42-7, Polypropyleneimine 25104-18-1, Poly(L-lysine) 25154-86-3, PDMAEMA 50985-30-3, N,N'-Bis(2-aminopropyl)-ethylenediamine
RL: BSU (Biological study, unclassified); TEM (Technical or engineered material use); BIOL (Biological study); USES (Uses)
(solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT 26913-06-4P, Poly[imino(1,2-ethanediyl)]
RL: BUU (Biological use, unclassified); SPN (Synthetic preparation); TEM (Technical or engineered material use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT 25038-59-9, Mylar, biological studies
RL: BUU (Biological use, unclassified); TEM (Technical or engineered material use); BIOL (Biological study); USES (Uses)
(solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)
IT 7647-01-0, Hydrogen chloride, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(solid surface with immobilized degradable cationic polymer for transfecting eukaryotic cells)

L7 ANSWER 6 OF 14 CA COPYRIGHT 2008 ACS on STN
AN 144:360317 CA
ED Entered STN: 27 Apr 2006
TI Positive photosensitive resin and novel dithiol compound
IN Mita, Takahito
PA Japan
SO U.S. Pat. Appl. Publ., 13 pp.
CODEN: USXXCO
DT Patent
LA English
INCL 430270100
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 2006068324 | A1 | 20060330 | US 2005-235045 | 20050926 |
| JP 2006091762 | A | 20060406 | JP 2004-280353 | 20040927 |
| PRAI JP 2004-280353 | A | 20040927 | | |

CLASS
PATENT NO. CLASS PATENT FAMILY CLASSIFICATION CODES

| | | |
|---|---|---|
| US 2006068324 | INCL | 430270100 |
| | IPCI | G03C0001-76 [I,A] |
| | IPCR | G03C0001-76 [I,A]; G03C0001-76 [I,C] |
| | NCL | 430/270.100 |
| | ECLA | G03F007/039C; G03F007/039C1S |
| JP 2006091762 | IPCI | G03F0007-039 [I,A]; C07C0323-52 [I,A]; C07C0323-00 [I,C*]; H01L0021-027 [I,A]; H01L0021-02 [I,C*] |
| | FTERM | 2H025/AA01; 2H025/AA02; 2H025/AA04; 2H025/AB16; 2H025/AC04; 2H025/AC08; 2H025/AD03; 2H025/BE00; 2H025/BE10; 2H025/BG00; 2H025/BJ10; 2H025/CB14; 2H025/CB20; 2H025/CB41; 4H006/AA01; 4H006/AA03; 4H006/AB46; 4H006/TA04; 4H006/TB52 |

OS MARPAT 144:360317

AB A pos. photosensitive resin having, in the high-mol. main chain, a structure represented by the following general formula -S-R1-COO-CR4R5-R3-CR6R7-OOC-R2-S- (R1-3 = bivalent hydrocarbon; R4-7 = monovalent hydrocarbon with C1-4) : and a dithiol compound represented by the following general formula HS-R1-COO-CR4R5-R3-CR6R7-OOC-R2-SH. The pos. photosensitive resin can alleviate the problems of conventional technique and, when used for formation of a fine pattern in semiconductor production, can show a higher resist sensitivity than conventional products and can bring about effects such as reduction in impurities after development.

The dithiol compound is novel and extremely suitable for use in production of the pos. photosensitive resin.

ST pos photosensitive resin dithiol compd resist

IT Photoimaging materials
Resists
(Pos. photosensitive resin and novel dithiol compound for resists)

IT 881211-92-3P 881211-93-4P 881211-94-5P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(Pos. photosensitive resin and novel dithiol compound for resists)

IT 864679-84-5P 881211-91-2P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(preparation of novel dithiol compound for resists)

IT 507-09-5, Thioacetic acid, reactions 188837-15-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of novel dithiol compound for resists)

L7 ANSWER 7 OF 14 CA COPYRIGHT 2008 ACS on STN

AN 143:388238 CA

ED Entered STN: 10 Nov 2005

TI Efficient release method of adherends without damaging nor residual adhesive

IN Iwanaga, Shinichiro; Ota, Masaru

PA JSR Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF

DT Patent

FOR 10559534 by Cynthia Hamilton

LA Japanese
IC ICM C09J005-00
ICS H01L021-304
CC 38-3 (Plastics Fabrication and Uses)
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2005290146 | A | 20051020 | JP 2004-105578 | 20040331 |
| PRAI JP 2004-105578 | | 20040331 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2005290146 | ICM | C09J005-00 |
| | ICS | H01L021-304 |
| | IPCI | C09J0005-00 [ICM,7]; H01L0021-304 [ICS,7]; H01L0021-02 [ICS,7,C*] |
| | IPCR | C09J0005-00 [I,A]; C09J0005-00 [I,C*]; H01L0021-02 [N,C*]; H01L0021-304 [N,A] |
| | FTERM | 4J040/NA20; 4J040/PA30; 4J040/PA32; 4J040/PA42 |

AB The release method, useful for semiconductor device fabrication, includes irradiating laminates comprising substrates, cured adhesives, and adherends with light so as to decompose the adhesives, heating/expanding the adhesives, dissolving in solvents and/or alkaline aqueous solns., and separating the adherends from the substrates. Thus, a laminate comprising a Si wafer, a cured adhesive layer containing tert-Bu methacrylate homopolymer, 2,5-dimethyl-2,5-hexanediol diacrylate, photopolymn. initiator, and 4,7-di-n-butoxynaphthyltetrahydrothiophenium trifluoromethanesulfonate, and quartz glass was irradiated with light from the glass surface, heated at 120° for 5 min, and dipped in acetone for 5 min to give a recovered Si wafer and quartz glass.
ST adhesive removal semiconductor device fabrication; photoacid generator polyacrylate adhesive removal expansion
IT Expansion
Semiconductor device fabrication
(efficient release method of adherends without damaging nor residual adhesive)
IT 25189-00-8P, tert-Butyl methacrylate homopolymer
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); PREP (Preparation); PROC (Process)
(adhesive, crosslinked; efficient release method of adherends without damaging nor residual adhesive)
IT 188837-15-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(crosslinker for adhesives; efficient release method of adherends without damaging nor residual adhesive)
IT 67-64-1, Acetone, uses
RL: NUU (Other use, unclassified); USES (Uses)
(for dissolving adhesives; efficient release method of adherends without damaging nor residual adhesive)
IT 366464-82-6
RL: MOA (Modifier or additive use); USES (Uses)
(photoacid generator, adhesives containing; efficient release method of

adherends without damaging nor residual adhesive)
IT 60676-86-0, Quartz glass
RL: MSC (Miscellaneous)
(substrate; efficient release method of adherends without damaging nor residual adhesive)
IT 7440-21-3, Silicon, miscellaneous
RL: MSC (Miscellaneous)
(wafer, adherend; efficient release method of adherends without damaging nor residual adhesive)

L7 ANSWER 8 OF 14 CA COPYRIGHT 2008 ACS on STN
AN 143:315452 CA
ED Entered STN: 13 Oct 2005
TI Resist polymer, resist composition, process for pattern formation, and starting compounds for production of the resist polymer
IN Momose, Hikaru; Ootake, Atsushi; Nakamura, Tadashi; Ueda, Akifumi
PA Mitsubishi Rayon Co., Ltd., Japan
SO PCT Int. Appl., 178 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
IC ICM C08F020-10
ICS G03F007-039; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38
FAN.CNT 1

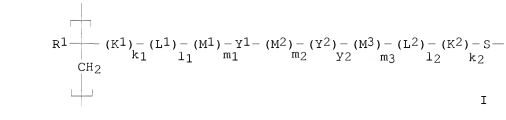
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | WO 2005085301 | A1 | 20050915 | WO 2005-JP4402 | 20050308 |
| | W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| | RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| | CN 1930194 | A | 20070314 | CN 2005-80007225 | 20050308 |
| | US 2007190449 | A1 | 20070816 | US 2006-592057 | 20060908 |
| | KR 785585 | B1 | 20071213 | KR 2006-720723 | 20061002 |
| | JP 2007327062 | A | 20071220 | JP 2007-160177 | 20070618 |
| PRAI | JP 2004-63616 | A | 20040308 | | |
| | JP 2004-73183 | A | 20040315 | | |
| | JP 2004-189889 | A | 20040628 | | |
| | JP 2004-220036 | A | 20040728 | | |
| | JP 2004-253002 | A | 20040831 | | |
| | JP 2004-376738 | A | 20041227 | | |
| | JP 2005-4315 | A | 20050111 | | |
| | JP 2006-519412 | A3 | 20050308 | | |
| | WO 2005-JP4402 | W | 20050308 | | |

FOR 10559534 by Cynthia Hamilton

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| WO 2005085301 | ICM | C08F020-10 |
| | ICS | G03F007-039; H01L021-027 |
| | IPCI | C08F0020-10 [ICM,7]; C08F0020-00 [ICM,7,C*]; G03F0007-039 [ICS,7]; H01L0021-027 [ICS,7]; H01L0021-02 |
| | | [ICS,7,C*] |
| | IPCR | C08F0020-00 [I,C*]; C08F0020-10 [I,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A]; H01L0021-02 [I,C*]; H01L0021-027 [I,A] |
| CN 1930194 | IPCI | C08F0020-10 [I,A]; C08F0020-00 [I,C*]; G03F0007-039 [I,A]; H01L0021-027 [I,A]; H01L0021-02 [I,C*] |
| | IPCR | C08F0020-00 [I,C]; C08F0020-10 [I,A] |
| US 2007190449 | IPCI | G03C0001-00 [I,A] |
| | NCL | 430/270.100 |
| KR 785585 | IPCI | G03F0007-039 [I,A]; C08F0020-00 [I,A]; C08F0020-10 [I,A]; H01L0021-027 [I,A]; H01L0021-02 [I,C*] |
| JP 2007327062 | IPCI | C08F0220-10 [I,A]; C08F0220-00 [I,C*]; G03F0007-039 [I,A]; H01L0021-027 [I,A]; H01L0021-02 [I,C*] |
| | FTERM | 2H025/AA02; 2H025/AA04; 2H025/AB16; 2H025/AC04; 2H025/AC06; 2H025/AC08; 2H025/AD03; 2H025/BE07; 2H025/BF02; 2H025/BG00; 2H025/FA12; 2H025/FA17; 4J100/AL08P; 4J100/AL08Q; 4J100/BA03P; 4J100/BA03Q; 4J100/BA04P; 4J100/BA40P; 4J100/BA40Q; 4J100/BB13Q; 4J100/BB18P; 4J100/BC04P; 4J100/BC04Q; 4J100/BC07P; 4J100/BC08P; 4J100/BC09P; 4J100/BC09Q; 4J100/BC12P; 4J100/BC12Q; 4J100/BC53P; 4J100/BC53Q; 4J100/CA04; 4J100/CA05; 4J100/DA01; 4J100/DA05; 4J100/JA38 |

GI




I

AB A resist polymer which exhibits reduced line edge roughness and little causes defects in DUV excimer laser lithog. or the like and which contains as the structural unit an acid-dissociable unit represented by the general formula J[{(Kl)k1}n{(L1)l1}n{(M1)m1}n{Y}n{(M2)m2}n{(L2)l2}n{(K2)k2}n[E]n]n or I (n = 2-24; J = n-valent hydrocarbon group optionally bearing a substituent and/or a heteroatom; E = residue of polymerization inhibitor, chain

transfer agent, or polymerization initiator; K1 and K2 = at least one kind of
groups selected from among alkylene, cycloalkylene, oxyalkylene, arylene, etc.; L1 and L2 = at least one kind of groups selected from among -C(O)O-,
-C(O)-, and -OC(O)-; M1, M2, and M3 = at least one kind of groups selected
from among alkylene, cycloalkylene, oxyalkylene, and arylene; Y, Y1, and Y2 = acid-dissociable linkage; k1, k2, l1, l2, m1, m2, and m3 = 0 or 1; and R1 is H or Me).
ST resist DUV photoresist polymer compn telomer chain transfer agent
IT Photolithography
Photoresists
(UV; preparation of telomer for synthesis of DUV photoresist polymer)
IT Chain transfer agents
Resists
(preparation of telomer for synthesis of DUV photoresist polymer)
IT 864679-84-5P
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(chain transfer agent; preparation of chain transfer agent)
IT 864679-76-5P
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(preparation of chain transfer agent)
IT 10553-78-3 188837-15-2 864679-86-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of chain transfer agent)
IT 864679-77-6P 864679-79-8P 864679-81-2P 864683-70-5P 864683-73-8P 864683-74-9P 864683-76-1P 864683-78-3P
RL: IMF (Industrial manufacture); PRP (Properties); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(preparation of telomer for synthesis of DUV photoresist polymer)
RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) E I Du Pont de Nemours & Co; EP 1479700 A1 2004 CA
(2) E I Du Pont de Nemours & Co; US 2004242798 A1 2004 CA
(3) E I Du Pont de Nemours & Co; US 2004248039 A1 2004 CA
(4) E I Du Pont de Nemours & Co; JP 2004352989 A 2004 CA
(5) Fuji Photo Film Co Ltd; JP 2002303984 A 2002 CA
(6) Fuji Photo Film Co Ltd; JP 200272481 A 2002
(7) Fuji Photo Film Co Ltd; JP 2003344994 A 2003 CA
(8) Nedolya, N; Zhurnal Organicheskoi Khimii 1987, V23(6), P1181 CA
(9) Rohm And Haas Electronic Materials L L C; EP 1403708 A2 2004 CA
(10) Rohm And Haas Electronic Materials L L C; CN 1514302 A 2004 CA
(11) Rohm And Haas Electronic Materials L L C; KR 2004030341 A 2004 CA
(12) Rohm And Haas Electronic Materials L L C; US 2004063030 A1 2004 CA
(13) Rohm And Haas Electronic Materials L L C; JP 2004151691 A 2004 CA
(14) Sumitomo Chemical Co Ltd; JP 2003280200 A 2003 CA
(15) Toray Industries Inc; JP 2003342306 A 2003 CA
(16) Tsuaitowanfarengonyejishuuyenjiouyuen; JP 03-134669 A 1991 CA

L7 ANSWER 9 OF 14 CA COPYRIGHT 2008 ACS on STN
AN 142:82296 CA
ED Entered STN: 20 Jan 2005

FOR 10559534 by Cynthia Hamilton

TI Photocurable resin composition
IN Yashiro, Takao; Tatara, Ryoji; Tanabe, Takayoshi
PA DSM Ip Assets B.V., Neth.
SO PCT Int. Appl., 40 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM G03F007-038
ICS G03F007-00
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | WO 2004111733 | A1 | 20041223 | WO 2004-NL423 | 20040614 |
| | W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| | RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| | JP 2005053936 | A | 20050303 | JP 2003-175755 | 20030620 |
| | EP 1634124 | A1 | 20060315 | EP 2004-748655 | 20040614 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK | | | | |
| | CN 1806208 | A | 20060719 | CN 2004-80016383 | 20040614 |
| | US 2007004816 | A1 | 20070104 | US 2005-559534 | 20051202 |
| PRAI | JP 2003-169206 | A | 20030613 | | |
| | JP 2003-175755 | A | 20030620 | | |
| | WO 2004-NL423 | W | 20040614 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| WO 2004111733 | ICM | G03F007-038 |
| | ICS | G03F007-00 |
| | IPCI | G03F0007-038 [ICM,7]; G03F0007-00 [ICS,7] |
| | IPCR | C08L0021-00 [I,C*]; C08L0021-00 [I,A]; C08G0059-00 [I,C*]; C08G0059-40 [I,A]; C08L0063-00 [I,C*]; C08L0063-00 [I,A]; G03F0007-00 [I,C*]; G03F0007-00 [I,A]; G03F0007-027 [N,C*]; G03F0007-027 [N,A]; G03F0007-038 [I,C*]; G03F0007-038 [I,A] |
| | ECLA | G03F007/00S; G03F007/038 |
| JP 2005053936 | IPCI | C08G0059-40 [ICM,7]; C08G0059-00 [ICM,7,C*]; C08L0021-00 [ICS,7]; C08L0063-00 [ICS,7] |
| | IPCR | G03F0007-00 [I,A]; G03F0007-00 [I,C*]; G03F0007-027 [N,A]; G03F0007-027 [N,C*]; G03F0007-038 [I,A]; G03F0007-038 [I,C*] |
| | FTERM | 4J002/AC002; 4J002/CD081; 4J002/CD101; 4J002/EB106; 4J002/EV296; 4J002/FD146; 4J036/AA02; 4J036/AB01; |

4J036/AD08; 4J036/AD09; 4J036/AG04; 4J036/AG06;
4J036/AJ05; 4J036/AJ08; 4J036/AK19; 4J036/DC15;
4J036/DC16; 4J036/EA03; 4J036/FB03

| | | |
|---|---|---|
| EP 1634124 | IPCI | G03F0007-038 [ICM,7]; G03F0007-00 [ICS,7] |
| | IPCR | C08L0021-00 [I,C*]; C08L0021-00 [I,A]; C08G0059-00 [I,C*]; C08G0059-40 [I,A]; C08L0063-00 [I,C*]; C08L0063-00 [I,A]; G03F0007-00 [I,C*]; G03F0007-00 [I,A]; G03F0007-027 [N,C*]; G03F0007-027 [N,A]; G03F0007-038 [I,C*]; G03F0007-038 [I,A] |
| | ECLA | G03F007/00S; G03F007/038 |
| CN 1806208 | IPCI | G03F0007-038 [I,A]; G03F0007-00 [I,A] |
| US 2007004816 | IPCI | C08F0002-46 [I,A] |
| | NCL | 522/069.000 |
| | ECLA | G03F007/00S; G03F007/038 |

AB The present invention relates to a liquid photocurable resin composition exhibiting high photocurability and producing cured products with superior mech. strength and fracture toughness, and particularly to a photocurable resin composition useful as a resin composition for three-dimensional photofabrication of a cured product for which impact resistance is particularly required. The photocurable composition comprises (A) a component comprising a carboxyl group that may dissociate in the presence of an acid, (B) a cationically polymerizable compound, and (C) a cationic photoinitiator.

ST photocurable resin compn 3D photofabrication impact resistance mech strength

IT Synthetic rubber, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(Resinous Bond RKB; photocurable resin composition)

IT Coating materials
(photocurable; photocurable resin composition)

IT 109856-58-8, UVI 1697
RL: TEM (Technical or engineered material use); USES (Uses)
(UVI 1697; photocurable resin composition)

IT 1663-39-4DP, polymers with epoxy resins and acrylic resins and synthetic rubber 1675-54-3DP, polymers with epoxy resins and acrylic resins and synthetic rubber 2386-87-0DP, polymers with epoxy resins and acrylic resins and synthetic rubber 3130-19-6DP, polymers with epoxy resins and acrylic resins and synthetic rubber 25723-16-4DP, polymers with epoxy resins and acrylic resins and synthetic rubber 29570-58-9DP, polymers with epoxy resins and acrylic resins and synthetic rubber 88465-93-4DP, polymers with epoxy resins and acrylic resins and synthetic rubber 168274-87-1DP, polymers with epoxy resins and acrylic resins and synthetic rubber 188837-15-2DP, polymers with epoxy resins and acrylic resins and synthetic rubber
RL: PNU (Preparation, unclassified); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(photocurable resin composition)

IT 79-10-7, Acrylic acid, uses 947-19-3, Irgacure 184 1663-39-4, tert-Butyl acrylate 25068-38-6 25085-98-7, UVR 6110 25791-96-2, Sannix GP 400 29570-58-9, Dipentaerythritol hexaacrylate 68924-34-5, UVR 6199 88465-93-4 121915-68-2, Viscoat 2100 168274-87-1,

tert-Butyl acrylate-p-isopropenyl phenol copolymer 188837-15-2
RL: TEM (Technical or engineered material use); USES (Uses)
(photocurable resin composition)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Asahi Denka Kogyo Kabushiki Kaisha; EP 0831127 A 1998 CA
(2) Canon K K; DE 3621477 A 1987 CA
(3) Imperial Chemical Industries Plc; EP 0535828 A 1993 CA
(4) Jsr Corporation; EP 0901043 A 1999 CA
(5) Tokyo Ohka Kogyo Co Ltd; EP 1182506 A 2002 CA
(6) Wako Pure Chemical Industries Ltd; EP 0887706 A 1998 CA

L7 ANSWER 10 OF 14 CA COPYRIGHT 2008 ACS on STN
AN 140:321916 CA
ED Entered STN: 06 May 2004
TI (Meth)acrylic ester and its polymer
IN Chamoto, Shigero; Morikawa, Toshiyuki
PA Yasuhara Chemical Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C07C069-54
ICS C08F020-20; G03F007-033
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 74

FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2004123611 | A | 20040422 | JP 2002-290583 | 20021003 |
| PRAI JP 2002-290583 | | 20021003 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2004123611 | ICM | C07C069-54 |
| | ICS | C08F020-20; G03F007-033 |
| | IPCI | C07C0069-54 [ICM,7]; C07C0069-00 [ICM,7,C*]; C08F0020-20 [ICS,7]; C08F0020-00 [ICS,7,C*]; G03F0007-033 [ICS,7] |
| | IPCR | C07C0069-00 [I,C*]; C07C0069-54 [I,A]; C08F0020-00 [I,C*]; C08F0020-20 [I,A]; G03F0007-033 [I,A]; G03F0007-033 [I,C*] |
| | FTERM | 2H025/AA02; 2H025/AA09; 2H025/AA14; 2H025/AB14; 2H025/AB16; 2H025/AB17; 2H025/AC04; 2H025/AC05; 2H025/AC06; 2H025/AD01; 2H025/AD03; 2H025/BE00; 2H025/BE10; 2H025/BG00; 2H025/CB14; 2H025/FA17; 4H006/AA01; 4H006/AA03; 4H006/AB46; 4H006/AB92; 4H006/KC14; 4H006/KE00; 4J100/AB07Q; 4J100/AJ02Q; 4J100/AK32Q; 4J100/AL00Q; 4J100/AL62P; 4J100/AL65P; 4J100/AL67P; 4J100/BA03P; 4J100/BA03Q; 4J100/BA04Q; 4J100/CA01; 4J100/CA04; 4J100/DA01; 4J100/JA01; 4J100/JA03; 4J100/JA07; 4J100/JA15; 4J100/JA32; 4J100/JA35; 4J100/JA37; 4J100/JA38; 4J100/JA44; 4J100/JA46; 4J100/JA52 |

AB A (meth)acrylic ester is represented by
CH2:CHX1CO2CR1R3Y(Z)CR2R4OCOCHX2:C

H2, where R1-4 = C1-20 alkyl, X1, X2 = H, Me, Y = C0-20 linear or branched
alkylene, Z = H, C1-20 linear or branched alkyl, or a (meth)acrylic ester
group of a tertiary mono- or polyalc. The monomers are useful in
photoresists with high resolution, good dry etching properties, transparency
and adhesion. 2,5-Dimethyl-2,5-hexanediol diacrylate was prepared from
2,5-dimethyl-2,5-hexanediol and acryloyl chloride.
ST acrylate ester manuf photoresist
IT 188837-15-2P
RL: IMF (Industrial manufacture); PREP (Preparation)
((meth)acrylic ester and its polymer)
IT 110-03-2, 2,5-Dimethyl-2,5-hexanediol 814-68-6, Acrylic acidchloride
RL: RCT (Reactant); RACT (Reactant or reagent)
((meth)acrylic ester and its polymer)

L7 ANSWER 11 OF 14 CA COPYRIGHT 2008 ACS on STN
AN 136:310611 CA
ED Entered STN: 09 May 2002
TI Crosslinkable compositions, crosslinked resins, and their decrosslinked resins
IN Watanabe, Yasushige; Okada, Hiroshi
PA NOF Corporation, Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F220-20
ICS C08F002-44; C08F008-10; C08F265-04
CC 37-3 (Plastics Manufacture and Processing)
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2002121228 | A | 20020423 | JP 2000-311213 | 20001011 |
| PRAI JP 2000-311213 | | 20001011 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2002121228 | ICM | C08F220-20 |
| | ICS | C08F002-44; C08F008-10; C08F265-04 |
| | IPCI | C08F0220-20 [ICM,7]; C08F0220-00 [ICM,7,C*]; C08F0002-44 [ICS,7]; C08F0008-10 [ICS,7]; C08F0008-00 [ICS,7,C*]; C08F0265-04 [ICS,7]; C08F0265-00 [ICS,7,C*] |
| | IPCR | C08F0002-44 [I,C*]; C08F0002-44 [I,A]; C08F0008-00 [I,C*]; C08F0008-10 [I,A]; C08F0220-00 [I,C*]; C08F0220-20 [I,A]; C08F0265-00 [I,C*]; C08F0265-04 [I,A] |

AB The compns. for giving recyclable resins, comprise vinyl monomers, di(meth)acrylates shown as R1C(:CH2)CO2CMe2R2OC(O)C(:CH2)R1 (R1 = H, Me; R2 = C1-11 linear or branched alkylene), and radical generators. The crosslinked resins are obtained by polymerizing and crosslinking the compns., and the decrosslinked resins are obtained by heat-cutting the tertiary alc.-derived ester bonds in the crosslinked resins. Thus, a mixture containing

styrene, 2,5-dimethyl-2,5-hexanediol dimethacrylate, and
tert-butylperoxybenzoate was polymerized to give a crosslinked polymer showing
solubility in benzene ≤10% initially and 100% after heating.
ST diacrylate crosslinked vinyl resin decrosslinking recycling; dimethacrylate crosslinked vinyl resin decrosslinking recycling; styrene dimethylhexanediol dimethacrylate crosslinked polymer heating decrosslinking
IT Recycling of plastics and rubbers
(crosslinkable vinyl monomer-di(meth)acrylate compns. for resins and their decrosslinked resins for recycling)
IT Polymer degradation
(thermal; crosslinkable vinyl monomer-di(meth)acrylate compns. for resins and their decrosslinked resins for recycling)
IT 382137-73-7P 410070-19-8P, 2,5-Dimethyl-2,5-hexanediol dimethacrylate-styrene copolymer 410070-20-1P 410070-21-2P 410070-22-3P
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(crosslinkable vinyl monomer-di(meth)acrylate compns. for resins and their decrosslinked resins for recycling)
IT 131787-39-8P 188837-15-2P 382137-71-5P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(crosslinkable vinyl monomer-di(meth)acrylate compns. for resins and their decrosslinked resins for recycling)

L7 ANSWER 12 OF 14 CA COPYRIGHT 2008 ACS on STN
AN 130:66874 CA
ED Entered STN: 30 Jan 1999
TI Synthesis and Characterization of Thermally Degradable Polymer Networks
AU Ogino, Kenji; Chen, Jir-Shyr; Ober, Christopher K.
CS Department of Materials Science and Engineering, Cornell University, Ithaca, NY, 14853-1501, USA
SO Chemistry of Materials (1998), 10(12), 3833-3838
CODEN: CMATEX; ISSN: 0897-4756
PB American Chemical Society
DT Journal
LA English
CC 35-8 (Chemistry of Synthetic High Polymers)
AB Diacrylate and dimethacrylate monomers containing thermally cleavable tertiary
ester linkages with different spacer lengths were synthesized and studied.
The photopolymn. rates of diacrylates were much higher than those of dimethacrylates. Glass transition temps. of the prepared networks increased
from 55 to 180° with decreasing spacer length for diacrylate networks and from 135 to 185° for dimethacrylate networks. Isothermal thermogravimetric analyses revealed that the networks were thermally stable up to 150° and decomposed smoothly between 180 and 200° to form partially dehydrated linear poly(acrylic acid) or poly(methacrylic acid). It was observed that decomposition reactions were

dominated by an autoacceleration mechanism. The rate of weight loss was dependent on temperature and spacer length. Although the resulting decomposition products were insol. in DMF, methanol, and water due to the presence of intermol. acid anhydride groups, they were completely soluble in dilute sodium hydroxide and ammonium hydroxide solution accompanied by hydrolysis or ammonolysis of the anhydride units.

ST thermally degradable polyacrylate network; thermal degrdn tertiary diol diacrylate polymer; methacrylate tertiary diol polymer degrdn; kinetics thermal degrdn polyacrylate network; mechanism thermal degrdn polyacrylate network

IT Polymerization
(photopolymn.; in preparation of thermally degradable tertiary diol di(meth)acrylate networks)

IT Glass transition temperature
(preparation and thermal degradation mechanism and kinetics of tertiary diol di(meth)acrylate networks)

IT Polymer degradation
(thermal, mechanism; preparation and thermal degradation mechanism and kinetics of tertiary diol di(meth)acrylate networks)

IT Polymer degradation kinetics
(thermal; preparation and thermal degradation mechanism and kinetics of tertiary diol di(meth)acrylate networks)

IT 19781-07-8P, 2,7-Dimethyl-2,7-octanediol
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(monomer intermediate; preparation and thermal degradation mechanism and kinetics of tertiary diol di(meth)acrylate networks)

IT 75-16-1, Methylmagnesium bromide 110-03-2, 2,5-Dimethyl-2,5-hexanediol 627-93-0, Dimethyl adipate 814-68-6, Acryloyl chloride 920-46-7, Methacryloyl chloride 22092-57-5, 2,9-Dimethyl-2,9-decanediol 22092-59-7, 2,11-Dimethyl-2,11-dodecanediol
RL: RCT (Reactant); RACT (Reactant or reagent)
(monomer starting material; preparation and thermal degradation mechanism and kinetics of tertiary diol di(meth)acrylate networks)

IT 131787-39-8P 188837-15-2P 217973-62-1P 217973-86-9P 217973-93-8P 217974-02-2P 217974-11-3P 217974-18-0P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(monomer; preparation and thermal degradation mechanism and kinetics of tertiary diol di(meth)acrylate networks)

IT 217974-25-9P 217974-33-9P 217974-38-4P 217974-43-1P 217974-47-5P 217974-54-4P 217974-61-3P 217974-67-9P
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(preparation and thermal degradation mechanism and kinetics of tertiary diol

di(meth)acrylate networks)
RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(3) Grant, D; Polymer 1960, V1, P125 CA
(4) Grant, D; Polymer 1960, V1, P445 CA
(5) Jager, W; Macromolecules 1997, V30, P780 CA
(6) Kloosterboer, J; Adv Polym Sci 1988, V84, P1 CA
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(11) Tesoro, G; J Appl Polym Sci 1990, V39, P1425 CA
(12) Torres-Filho, A; Adv Polym Sci 1994, V51, P931 CA
(13) Yang, S; Chem Mater 1998, V10(6), P1475 CA

L7 ANSWER 13 OF 14 CA COPYRIGHT 2008 ACS on STN
AN 127:313184 CA
ED Entered STN: 25 Nov 1997
TI Low voltage drive liquid crystal device and its manufacture
IN Ogawa, Hiroshi; Kuriyama, Takeshi
PA Dainippon Ink and Chemicals, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G02F001-1333
ICS C09K019-54
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 09251157 | A | 19970922 | JP 1996-59092 | 19960315 |
| JP 3669456 | B2 | 20050706 | | |
| PRAI JP 1996-59092 | | 19960315 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 09251157 | ICM | G02F001-1333 |
| | ICS | C09K019-54 |
| | IPCI | G02F0001-1333 [ICM,6]; C09K0019-54 [ICS,6] |
| | IPCR | G02F0001-13 [I,C*]; G02F0001-1333 [I,A]; C09K0019-54 [I,C*]; C09K0019-54 [I,A]; G02F0001-1334 [I,A] |

AB In the title device comprising a light-adjusting layer, comprised of liquid crystals and transparent polymers, interposed between a pair of electrode-bearing transparent substrates, the light-adjusting layer is formed by irradiating alkylene di(meth)acrylates, which have alkyl sidechains at α-positions and C3-18 alkylene principal chains. The device is drivable with less than 10 V and can be used as a projection apparatus
ST liq crystal display projection app
IT Projection apparatus

(electrooptical, liquid-crystal; low voltage drive liquid crystal device
and its manufacture)
IT Liquid crystal displays
(low voltage drive liquid crystal device and its manufacture)
IT 14201-97-9, Octadecane-1,12-diol diacrylate 62722-22-9, Aronix M 120 93804-11-6, Light ester IMA 197504-20-4
RL: DEV (Device component use); USES (Uses)
(light adjusting layer of low voltage drive liquid crystal device)
IT 188837-15-2P 197504-13-5P 197504-14-6P 197504-15-7P 197504-16-8P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(light adjusting layer of low voltage drive liquid crystal device)
IT 79-10-7, 2-Propenoic acid, reactions 110-03-2 144-19-4
RL: RCT (Reactant); RACT (Reactant or reagent)
(light adjusting layer of low voltage drive liquid crystal device)

L7 ANSWER 14 OF 14 CA COPYRIGHT 2008 ACS on STN
AN 126:264464 CA
ED Entered STN: 13 May 1997
TI Preparation of tertiary-alkyl acrylates from acrylic chloride in hydrocarbon solvents
IN Nakamura, Tetsuya; Amaya, Naoyuki
PA Nippon Oils & Fats Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C07C067-14
ICS B01J031-02; C07C069-54; C07B061-00
CC 35-2 (Chemistry of Synthetic High Polymers)
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 09052864 | A | 19970225 | JP 1995-203569 | 19950809 |
| PRAI JP 1995-203569 | | 19950809 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 09052864 | ICM | C07C067-14 |
| | ICS | B01J031-02; C07C069-54; C07B061-00 |
| | IPCI | C07C0067-14 [ICM,6]; B01J0031-02 [ICS,6]; C07C0069-54 [ICS,6]; C07B0061-00 [ICS,6] |
| | IPCR | B01J0031-02 [I,C*]; B01J0031-02 [I,A]; C07B0061-00 [I,C*]; C07B0061-00 [I,A]; C07C0067-00 [I,C*]; C07C0067-14 [I,A]; C07C0069-00 [I,C*]; C07C0069-54 [I,A] |

OS MARPAT 126:264464
AB CH2:CHCO2CR1R2R3 (R1-3 = C1-12 substituents; total number of C atoms of R1-3
= 5-21) are prepared in high yield by treatment of acrylic chloride (I) with
R2R2R3COH in hydrocarbon solvents. A mixture of Et3N and toluene was added

to a mixture of toluene, I, and 2,5-dimethyl-2,5-hexanediol at 50°
over 1 h and the reaction mixture was further stirred at 50° for 2 h
to give 85% 2,5-di methyl-2,5-hexanediol diacrylate, vs. 7% for a control
using acetone instead of toluene.
ST tert alkyl acrylate prepn; acrylic chloride esterification tertiary alc;
hydrocarbon solvent tertiary alc acryloylation
IT Hydrocarbons, uses
RL: NUU (Other use, unclassified); USES (Uses)
(preparation of tert-alkyl acrylates from acrylic chloride and
tertiary
alcs. in hydrocarbon solvents)
IT 106-63-8P 13141-04-3P 188837-15-2P 188837-16-3P
188837-17-4P
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP
(Preparation)
(preparation of tert-alkyl acrylates from acrylic chloride and
tertiary
alcs. in hydrocarbon solvents)
IT 71-43-2, Benzene, uses 96-14-0, 3-Methylpentane 108-88-3, Toluene,
uses 110-54-3, Hexane, uses 110-82-7, Cyclohexane, uses 111-65-9,
Octane, uses 142-82-5, Heptane, uses 592-43-8, 2-Hexene 1330-20-7,
Xylene, uses
RL: NUU (Other use, unclassified); USES (Uses)
(preparation of tert-alkyl acrylates from acrylic chloride and
tertiary
alcs. in hydrocarbon solvents)
IT 75-65-0, 2-Methyl-2-propanol, reactions 76-09-5, 2,3-Dimethyl-2,3-
butanediol 107-41-5, 2-Methyl-2,4-pentanediol 110-03-2,
2,5-Dimethyl-2,5-hexanediol 625-23-0, 2-Methyl-2-hexanol 814-68-6,
2-Propenoyl chloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of tert-alkyl acrylates from acrylic chloride and
tertiary
alcs. in hydrocarbon solvents)

=> d his

(FILE 'HOME' ENTERED AT 20:31:49 ON 14 MAR 2008)

FILE 'REGISTRY' ENTERED AT 20:32:00 ON 14 MAR 2008
L1 0 S DIMETHYLHEXANE AND DIMETHACRYLATE
L2 2 S DIMETHYLHEXANE AND DIACRYLATE
L3 1 S 188837-15-2
L4 122 S DIMETHYL AND HEXANEDIOL AND DIACRYLATE
L5 122 S DIMETHYL AND HEXANEDIOL AND DIACRYLATE
L6 2 S C14H22O4/MF AND DIACRYLATE

FILE 'CA' ENTERED AT 20:35:52 ON 14 MAR 2008
L7 14 S L3

=> s CO and acrylate and photoacid
879673 CO
194728 ACRYLATE
4104 PHOTOACID

L8 32 CO AND ACRYLATE AND PHOTOACID

=> d 32

L8 ANSWER 32 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 130:160483 CA
TI Dissolution characteristics of chemically amplified 193 nm resists
AU Itani, Toshiro; Yoshino, Hiroshi; Hashimoto, Shuichi; Yamana, Mitsuharu; Miyasaka, Mami; Tanabe, Hiroyoshi
CS NEC Corporation, Sagamihara, Kanagawa, 229-1198, Japan
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (1998), 16(6), 3726-3729
CODEN: JVTBD9; ISSN: 0734-211X
PB American Institute of Physics
DT Journal
LA English
RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> d all 1-32

L8 ANSWER 1 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 147:436726 CA
ED Entered STN: 01 Nov 2007
TI Exposure dose effects on the reaction-diffusion process in model extreme ultraviolet photoresists
AU Lavery, Kristopher A.; Vogt, Bryan D.; Prabhu, Vivek M.; Lin, Eric K.; Wu, Wen-Li; Satija, Sushil K.; Choi, Kwang-Woo
CS Polymers Division, National Institute of Standards and Technology, Gaithersburg, MD, 20899-8541, USA
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures--Processing, Measurement, and Phenomena (2006), 24(6), 3044-3047
CODEN: JVSTBM; ISSN: 1071-1023
PB American Institute of Physics
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB The effect of exposure dose on the latent image deprotection profile in a model extreme UV (EUV) photoresist polymer, poly(hydroxystyrene-co-d9-tert-Bu acrylate), is measured with neutron reflectometry. As the photoacid concentration is increased by exposure dose, the spatial extent of propagation increases but eventually becomes self-limited by the products of the reaction. A long-range deprotection path occurs with diffusion length between 10 and 100 Å, while an addnl. subnanometer short-range deprotection length scale proceeds monotonically with dose. These measurements show that the photoacid diffusion length into unexposed regions of a photoresist is limited even in the absence of base quencher additives. These fundamental data can be used to highlight materials effects on photoresist processing and to improve quant. models for EUV photoresists needed at the

sub-32-nm half pitch lithog.
ST exposure dose diffusion model extreme UV photoresist
IT Photoresists
(UV, EUV; exposure dose effects on reaction-diffusion process in model extreme UV photoresists)
IT Diffusion
(exposure dose effects on reaction-diffusion process in model extreme UV photoresists)
IT Photolithography
(sub-32 nm half-pitch; exposure dose effects on reaction-diffusion process in model extreme UV photoresists)
IT 867296-29-5 928163-01-3
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(exposure dose effects on reaction-diffusion process in model extreme UV photoresists)
IT 144317-44-2, Triphenylsulfonium perfluorobutanesulfonate
RL: RGT (Reagent); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(exposure dose effects on reaction-diffusion process in model extreme UV photoresists)
IT 108-65-6
RL: TEM (Technical or engineered material use); USES (Uses)
(exposure dose effects on reaction-diffusion process in model extreme UV photoresists)
RE.CNT 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L8 ANSWER 2 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 146:390493 CA
ED Entered STN: 26 Apr 2007
TI Copolymers with large maximum dissolution rate and high contrast for semiconductor lithography, their manufacture, and compositions containing them
IN Yamagishi, Takanori; Hane, Yukiko
PA Maruzen Oil Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 41pp.
CODEN: JKXXAF
DT Patent
LA Japanese
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76

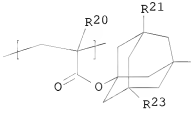
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2007077261 | A | 20070329 | JP 2005-266620 | 20050914 |
| PRAI JP 2005-266620 | | 20050914 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2007077261 | IPCI | C08F0220-28 [I,A]; C08F0220-00 [I,C*]; G03F0007-039 [I,A]; G03F0007-004 [I,A]; H01L0021-027 [I,A]; H01L0021-02 [I,C*] |
| | IPCR | C08F0220-00 [I,C]; C08F0220-28 [I,A]; G03F0007-004 [I,C]; G03F0007-004 [I,A]; G03F0007-039 [I,C]; G03F0007-039 [I,A]; H01L0021-02 [I,C]; H01L0021-027 [I,A] |
| | FTERM | 2H025/AA04; 2H025/AB16; 2H025/AC04; 2H025/AC08; 2H025/AD03; 2H025/BE00; 2H025/BE10; 2H025/BG00; 2H025/BJ01; 2H025/CB14; 2H025/CB41; 2H025/FA17; 4J100/AL03P; 4J100/AL08P; 4J100/AL08Q; 4J100/BA02P; 4J100/BA03Q; 4J100/BA15P; 4J100/BC03P; 4J100/BC04P; 4J100/BC07P; 4J100/BC08P; 4J100/BC09P; 4J100/BC09Q; 4J100/BC12P; 4J100/BC53Q; 4J100/CA04; 4J100/CA05; 4J100/CA06; 4J100/JA46 |

GI




I

AB The copolymers contain (A) repeating units having structures generating polar groups by decomposition with acids and (B) repeating units having polar groups, wherein A include CH2CR10[CO(OA1CO)nOCR11R12R13] (R10 = H, C1-4 hydrocarbyl; A1 = C7-12 bridged alicyclic hydrocarbylene; n = 0, 1; R11 = H, C1-4 hydrocarbyl; when R11 is H, R12 is H or C1-4 hydrocarbyl, and R13 is C1-12 saturated hydrocarbon-substituted oxy group; when R11 is C1-4 hydrocarbyl, R11 is C1-4 hydrocarbyl, and R13 is C1-12 saturated hydrocarbyl; R12 and R13 may be bonded to form rings) and I (R20 = H, C1-4 hydrocarbyl; R21-23 = H, OH, OCHR24OR25; R24 = H, C1-4 hydrocarbyl; R25 = C1-15 saturated hydrocarbyl; R24 and R25 may be bonded to form rings; at least one of R21-23 is OCHR24OR25). The manufacturing method includes reacting enol ethers with copolymers as above, but containing I (R20 = same as above; R21-23 = H, OH; at least one of R21-23 is OH) instead of I defined as above in the presence of acids. The compns. contain the copolymers, photoacid generators, and solvents.

ST copolymer chem amplified pos photoresist high resoln; butyrolactonyl methyldamantyl hydroxyadamantyl acrylate polymer ethoxyethene protection; large max dissoln rate photoresist semiconductor lithog

IT Positive photoresists
(chemical amplified; manufacture of copolymers for chemical amplified pos. photoresists with large maximum dissoln. rate and high contrast)

IT Ethers, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(enol, protective groups; manufacture of copolymers for chemical amplified pos. photoresists with large maximum dissoln. rate and high contrast)

IT Photolithography
Semiconductor materials
(manufacture of copolymers for chemical amplified pos. photoresists with large maximum dissoln. rate and high contrast)

IT 75-59-2, Tetramethylammonium hydroxide
RL: MSC (Miscellaneous)
(developer; manufacture of copolymers for chemical amplified pos. photoresists with large maximum dissoln. rate and high contrast)

IT 468758-27-2P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(manufacture of copolymers for chemical amplified pos. photoresists with large maximum dissoln. rate and high contrast)

IT 109-92-2DP, Ethyl vinyl ether, reaction products with hydroxyadamantyl-containing acrylate polymers 2182-55-0DP, Cyclohexyl vinyl ether, reaction products with hydroxyadamantyl-containing acrylate polymers

468758-27-2DP, reaction products with enol ethers
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(manufacture of copolymers for chemical amplified pos. photoresists with large
maximum dissoln. rate and high contrast)
IT 284474-28-8
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; manufacture of copolymers for chemical amplified pos. photoresists with large maximum dissoln. rate and high contrast)
IT 97-64-3, Ethyl lactate 84540-57-8, Propylene glycol methyl ether acetate
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; manufacture of copolymers for chemical amplified pos. photoresists
with large maximum dissoln. rate and high contrast)

L8 ANSWER 3 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 146:229775 CA
ED Entered STN: 08 Mar 2007
TI Acetal group-containing multifunctional (meth)acrylic acid esters, polymers, resist compositions, and manufacture of substrates having patterns
IN Nakamura, Masashi
PA Mitsubishi Rayon Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 53pp.
CODEN: JKXXAF
DT Patent
LA Japanese
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 74
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2007045924 | A | 20070222 | JP 2005-231384 | 20050809 |
| PRAI JP 2005-231384 | | 20050809 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2007045924 | IPCI | C08F0020-28 [I,A]; C08F0020-00 [I,C*]; G03F0007-039 [I,A]; H01L0021-027 [I,A]; H01L0021-02 [I,C*]; C07C0069-003 [I,A]; C07C0069-54 [I,A]; C07C0069-00 [I,C*] |
| | IPCR | C08F0020-00 [I,C]; C08F0020-28 [I,A]; C07C0069-00 [I,C]; C07C0069-003 [I,A]; C07C0069-54 [I,A]; G03F0007-039 [I,C]; G03F0007-039 [I,A]; H01L0021-02 [I,C]; H01L0021-027 [I,A] |
| | FTERM | 2H025/AA03; 2H025/AA04; 2H025/AA10; 2H025/AA11; 2H025/AB16; 2H025/AC04; 2H025/AC08; 2H025/AD03; 2H025/BE00; 2H025/BE10; 2H025/BG00; 2H025/CB14; 2H025/CB21; 2H025/CB41; 2H025/CB45; 2H025/FA17; 4H006/AA01; 4H006/AA03; 4H006/AB46; 4H006/KC14; 4J100/AL08P; 4J100/AL08Q; 4J100/AL08R; 4J100/AL65S; |

4J100/BA02S; 4J100/BA03R; 4J100/BC09Q; 4J100/BC09R;
4J100/BC53P; 4J100/CA06; 4J100/FA19; 4J100/JA37

OS MARPAT 146:229775

AB H2C:CR1CO2CHR3OA(O)m(CO)nC(R2):CH2 [R1-3 = H, Me; A = (un)substituted alkylene, (un)substituted cycloalkylene, (un)substituted oxyalkylene, (un)substituted polyoxyalkylene, (un)substituted arylene; m, n = 0-1; there are no acetal structures in OA(O)m] and their polymers are prepared Compns. comprising the resist compns. containing the polymers and photoacid generators are applied on substrates, irradiated with light, and developed to form patterns. Thus, 50.3 g 2-(vinyloxyethoxy)ethyl acrylate was treated with 29.2 g acrylic acid at 60°, mixed with PhMe, washed with saturated aqueous NaHCO3 solution twice, concentrated, and distilled to give 52.8 g H2C:CHCO2CH2CH2OCH2CH2OCHMeOCOCH: CH2 showing good thermal stability.

ST thermal stability acetal acrylate polymer resist pattern

IT Photolithography
Photoresists
(acetal group-containing multifunctional (meth)acrylates with good thermal stability for resists)

IT 924635-26-7P, 3,6-Dioxaoctane-1,7-diol diacrylate-α-methacryloyloxy-γ-butyrolactone-3-hydroxy-1-adamantyl methacrylate-2-methyl-2-adamantyl methacrylate copolymer 924635-27-8P, Cyanonorbornane methacrylate-3,6-dioxaoctane-1,7-diol dimethacrylate-α-methacryloyloxy-γ-butyrolactone-2-methyl-2-adamantyl methacrylate copolymer
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(acetal group-containing multifunctional (meth)acrylates with good thermal stability for resists)

IT 905280-45-7P, 3,6-Dioxaoctane-1,7-diol diacrylate 924635-25-6P, 3,6-Dioxaoctane-1,7-diol dimethacrylate
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(acetal group-containing multifunctional (meth)acrylates with good thermal stability for resists)

IT 79-10-7, Acrylic acid, reactions 79-41-4, Methacrylic acid, reactions 76392-22-8, 2-(2-Vinyloxyethoxy)ethyl methacrylate 86273-46-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(acetal group-containing multifunctional (meth)acrylates with good thermal stability for resists)

L8 ANSWER 4 OF 32 CA COPYRIGHT 2008 ACS on STN

AN 146:186147 CA

ED Entered STN: 22 Feb 2007

TI Ink compositions with good colorant dispersibility, printing method using them, and their printed articles

IN Tsujibata, Shigetomo

FOR 10559534 by Cynthia Hamilton

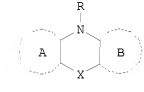
PA Fujifilm Holdings Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 39pp.
CODEN: JKXXAF
DT Patent
LA Japanese
CC 42-12 (Coatings, Inks, and Related Products)
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 2007023073 | A | 20070201 | JP 2005-203088 | 20050712 |
| PRAI | JP 2005-203088 | | 20050712 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2007023073 [I,A] | IPCI | C09D0011-00 [I,A]; B41J0002-01 [I,A]; B41M0005-00 |
| | IPCR | C09D0011-00 [I,C]; C09D0011-00 [I,A]; B41J0002-01 [I,C]; B41J0002-01 [I,A]; B41M0005-00 [I,C]; B41M0005-00 [I,A] |
| | FTERM | 2C056/EA04; 2C056/FC02; 2C056/FD20; 2C056/HA44; 2H186/AB11; 2H186/BA08; 2H186/DA12; 2H186/FA18; 2H186/FA20; 2H186/FB04; 2H186/FB13; 2H186/FB29; 2H186/FB30; 2H186/FB31; 2H186/FB36; 2H186/FB38; 2H186/FB40; 2H186/FB41; 2H186/FB44; 2H186/FB45; 2H186/FB46; 2H186/FB54; 4J039/AD10; 4J039/AD21; 4J039/AE05; 4J039/AE07; 4J039/BC67; 4J039/BC73; 4J039/BC74; 4J039/BC79; 4J039/BE01; 4J039/BE22; 4J039/BE27; 4J039/EA04; 4J039/EA06; 4J039/EA42; 4J039/EA44; 4J039/GA24 |

OS MARPAT 146:186147
GI



I

AB The compns. contain colorants and I (R = alkyl, acyl, carbamoyl, alkoxycarbonyl, aryl, sulfonyl, sulfamoyl; X = direct bonding, alkylene, O, S, NR1, CO; R1 = H, alkyl; at least one of A and B is an aromatic ring). Thus, a composition comprising quinacridone pigment (PR 122) 5.0, heterocyclic compound prepared by reacting 9(10H)-acridone with tetraethylene glycol Bu glycidyl ether 1.5, hexanediol diacrylate 60.0, caprolactone-modified dipentaerythritol hexaacrylate (DPCA 60) 27.5, and acylphosphine oxide (Lucirin TPO-L) 5.0 parts showed volume-average particle

diameter (D50) <100 nm, good curability in irradiation of UV at 100 mJ/cm2, and
no precipitate nor viscosity increase after storing at 25° or 70° for 1 mo.
ST jet printing ink compn colorant dispersibility; acridone tetraethylene glycol butyl glycidyl ether dispersant; hexanediol caprolactone modification dipentaerythritol acrylate quinacridone ink
IT Dispersing agents
Ink-jet printing
(heterocyclic dispersant-containing jet-printing ink compns. with good colorant dispersibility)
IT Epoxy resins, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(heterocyclic dispersant-containing jet-printing ink compns. with good colorant dispersibility)
IT Inks
(jet-printing; heterocyclic dispersant-containing jet-printing ink compns.
with good colorant dispersibility)
IT Polymerization catalysts
(radical photochem. or photoacid generators; heterocyclic dispersant-containing jet-printing ink compns. with good colorant dispersibility)
IT 25610-58-6DP, Butyl glycidyl ether homopolymer, acridon-10-yl-terminated 921435-58-7P 921435-59-8P
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(dispersant; heterocyclic dispersant-containing jet-printing ink compns.
with good colorant dispersibility)
IT 980-26-7, PR 122
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(for dispersants or pigment; heterocyclic dispersant-containing jet-printing ink compns. with good colorant dispersibility)
IT 578-95-0, 9(10H)-Acridone 2426-08-6, Butyl glycidyl ether 126021-43-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(heterocyclic dispersant-containing jet-printing ink compns. with good colorant dispersibility)
IT 473925-57-4, Celloxide 3000-OXT 221 copolymer 786655-03-6
RL: TEM (Technical or engineered material use); USES (Uses)
(heterocyclic dispersant-containing jet-printing ink compns. with good colorant dispersibility)
IT 18393-55-0D, Triphenylsulfonium, salts 84434-11-7, Lucirin TPO-L 273400-00-3, Cyracure UVI 6992
RL: CAT (Catalyst use); USES (Uses)
(polymerization initiator; heterocyclic dispersant-containing jet-printing ink
compns. with good colorant dispersibility)

L8 ANSWER 5 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 145:19039 CA
ED Entered STN: 22 Jun 2006
TI Radiation-sensitive resists, resist films and transfer films both made from same, and manufacture of electroplated electrically conductive metal

structures by using pattered resists as templates
IN Yokoyama, Kenichi; Nishikawa, Koji; Iwanaga, Shinichiro
PA Jsr Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 44 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
CC 76-2 (Electric Phenomena)
Section cross-reference(s): 38, 74

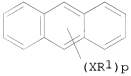
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2006145853 | A | 20060608 | JP 2004-336055 | 20041119 |
| PRAI JP 2004-336055 | | 20041119 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2006145853 | IPCI | G03F0007-004 [I,A]; G03F0007-039 [I,A]; G03F0007-20 [I,A]; H05K0003-18 [I,A] |
| | FTERM | 2H025/AA01; 2H025/AA02; 2H025/AA17; 2H025/AB11; 2H025/AB16; 2H025/AC01; 2H025/AD01; 2H025/AD03; 2H025/BE00; 2H025/BE07; 2H025/BE10; 2H025/BG00; 2H025/CA41; 2H025/CB10; 2H025/CB13; 2H025/CB14; 2H025/CB16; 2H025/CB17; 2H025/CB43; 2H025/CB45; 2H025/CC13; 2H025/CC20; 2H025/FA17; 2H025/FA35; 2H025/FA39; 2H025/FA43; 2H025/FA48; 2H097/FA02; 2H097/LA09; 5E343/AA22; 5E343/BB24; 5E343/BB38; 5E343/BB71; 5E343/CC62; 5E343/DD43; 5E343/DD56; 5E343/DD76; 5E343/EE36; 5E343/ER12; 5E343/ER18; 5E343/ER26; 5E343/GG08 |

OS MARPAT 145:19039
GI




I

AB The resists contain (A) 0.1-20 weight parts of anthracene derivs. I [p = 1-10; R1 = H, C1-8 (substituted) alkyl, C3-20 (substituted) alicyclic group, C2-4 alkenyl, etc.; ≥2 of R1 may form ring (containing hetero atoms); X = direct bond, O, S, CO, N(R'), etc.; R' = H, C1-8 (substituted) alkyl, C3-20 (substituted) alicyclic group, etc.; ≥2 of R' may form ring], (B) 0.1-20 weight parts of photoacid generators, and (C) 100 weight parts of polymers, and show sensitivity for 300-450 nm radiation. Also claimed are pos.-working above resists containing polymers bearing acid-labile groups as C. Also claimed are neg.-working

above resists containing alkali-soluble polymers as C, and crosslinking agents
capable of reaction with the alkali-soluble polymers under the presence of
acids. In manufacture of elec. conductive metal structures (e.g., bumps and
wirings of circuits), electroplating of the metal is carried out on
patterned resists used as templates. The resists, sensitive for both
i-line and g-line, provide patterns with good profile.

ST UV resist anthracene sensitizer; pos UV resist anthracene sensitizer; neg UV resist anthracene sensitizer; elec circuit conductor metal electroplating UV photoresist

IT Electrodeposition
(UV resists containing anthracene sensitizers, transfer films, and electroplating of conductor metals on patterned resists)

IT Negative photoresists
Photoresists
Positive photoresists
(UV; UV resists containing anthracene sensitizers, transfer films, and electroplating of conductor metals on patterned resists)

IT Bump contacts
Interconnections, electric
(electroplating of; UV resists containing anthracene sensitizers, transfer
films, and electroplating of conductor metals on patterned resists)

IT Transfers
(resist films; UV resists containing anthracene sensitizers, transfer films, and electroplating of conductor metals on patterned resists)

IT 68818-86-0, 9,10-Diethoxyanthracene 76275-14-4, 9,10-Dibutoxyanthracene
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(UV resists containing anthracene sensitizers, transfer films, and electroplating of conductor metals on patterned resists)

IT 17464-88-9, Cymel 1174
RL: TEM (Technical or engineered material use); USES (Uses)
(crosslinking agent, neg. resist component; UV resists containing anthracene sensitizers, transfer films, and electroplating of conductor
metals on patterned resists)

IT 24979-70-2, Maruka Lyncur S 2P 27029-76-1, m-Cresol-p-cresol-formaldehyde copolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(neg. resist component; UV resists containing anthracene sensitizers, transfer films, and electroplating of conductor metals on patterned resists)

IT 41580-58-9, N-(Trifluoromethylsulfonyloxy)phthalimide 66003-78-9, Triphenylsulfonium trifluoromethanesulfonate 133710-62-0
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES (Uses)
(photoacid generator, resist component; UV resists containing anthracene sensitizers, transfer films, and electroplating of conductor
metals on patterned resists)

IT 887704-12-3P, 2-Benzyl-2-propyl methacrylate-2-hydroxyethyl acrylate-p-hydroxyphenyl methacrylamide-isobornyl acrylate

-α-methyl-4-hydroxystyrene copolymer 887704-13-4P 887704-14-5P
887704-15-6P, Butyl acrylate-1,6-dimethacrylate
hexane-2-hydroxyethyl acrylate-2-methoxyethyl acrylate
-α-methyl-4-hydroxystyrene copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(pos. resist component; UV resists containing anthracene sensitizers,
transfer films, and electroplating of conductor metals on patterned
resists)

L8 ANSWER 6 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 142:178881 CA
ED Entered STN: 24 Feb 2005
TI Jet-printing ink compositions with good ink curability and bleeding resistance, their use in image formation, and epoxy compounds
IN Nishizeki, Masato; Miura, Norio; Okubo, Kimihiko
PA Konica Minolta Medical & Graphic, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 54 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C09D011-00
ICS B41J002-01; B41M005-00
CC 42-12 (Coatings, Inks, and Related Products)
Section cross-reference(s): 37, 74
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 2005029632 | A | 20050203 | JP 2003-194224 | 20030709 |
| PRAI | JP 2003-194224 | | 20030709 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2005029632 | ICM | C09D011-00 |
| | ICS | B41J002-01; B41M005-00 |
| | IPCI | C09D0011-00 [ICM,7]; B41J0002-01 [ICS,7]; B41M0005-00 [ICS,7] |
| | IPCR | B41J0002-01 [I,A]; B41J0002-01 [I,C*]; B41M0005-00 [I,A]; B41M0005-00 [I,C*]; C09D0011-00 [I,A]; C09D0011-00 [I,C*] |
| | FTERM | 2C056/EA05; 2C056/FC02; 2C056/HA44; 2H086/BA05; 2H086/BA59; 2H086/BA60; 4J039/AE05; 4J039/BC02; 4J039/BC03; 4J039/BC17; 4J039/BC33; 4J039/BC41; 4J039/BC50; 4J039/BC52; 4J039/BC54; 4J039/BC65; 4J039/BC72; 4J039/BC73; 4J039/BC74; 4J039/BC76; 4J039/BC77; 4J039/BC79; 4J039/BE26; 4J039/CA06; 4J039/EA05; 4J039/EA10; 4J039/EA15; 4J039/EA16; 4J039/EA17; 4J039/EA18; 4J039/EA19; 4J039/EA20; 4J039/EA42; 4J039/EA47; 4J039/GA24 |

OS MARPAT 142:178881
GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The compns. without showing skin sensitization contain epoxy compds. ALAr,
A(CO2)pL[(O2C)qA]r, or ACH2O(OC)pL[(CO)qOCH2A]r [A = 0-2 group-substituted 4-methyl-3,4-epoxy-cyclohexane residue; r = 1-3; L = (r + 1)-valent C1-15 linking group optionally containing O or S in main chain, direct bond; p, q = 0, 1]. Alternatively, the compns. contain epoxy compds. III, IV, V, and/or VI (R103-R106 = substituent; m3, m4, m6 = 0-2; m5 = 1, 2; p3, p4 = 0, 1; L3, L4 = divalent C1-8 linking group optionally containing O or S in main chain, direct bond). The image formation is carried out by imagewise-jetting the compns. from printing head nozzles to printing media and irradiating UV to the jet inks. The above epoxy compds. are also claimed. Thus, a magenta ink containing III (m3 = 0, L3 = direct bond, p3 = 1), OXT 221 (di[1-ethyl(3-oxetanyl)]methyl ether), Cyracure UVI 6990 (tri-Ph sulfonium salt photoacid generator), a pigment, and an additive was jet-printed on a film and UV-irradiated to give an image showing no spread between 2 dots.

ST epoxy compd jet printing ink UV curing; ink jet printing epoxy compd oxetane photoacid generator

IT Ink-jet printing
(jet-printing ink compns. containing epoxy compds. and their use in image formation by UV irradiation)

IT Epoxy resins, uses
RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(jet-printing ink compns. containing epoxy compds. and their use in image formation by UV irradiation)

IT Inks
(jet-printing; jet-printing ink compns. containing epoxy compds. and their use in image formation by UV irradiation)

IT Sulfonium compounds
RL: CAT (Catalyst use); USES (Uses)
(photoacid generator, ink containing; jet-printing ink compns. containing epoxy compds. and their use in image formation by UV irradiation)

IT Inks
(photocurable; jet-printing ink compns. containing epoxy compds. and their use in image formation by UV irradiation)

IT 744910-08-5P 744910-12-1P 744910-32-5P 835611-95-5P
RL: IMF (Industrial manufacture); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(curable ink containing; jet-printing ink compns. containing epoxy compds. and their use in image formation by UV irradiation)

IT 18934-00-4, OXT 221 744910-23-4 835611-87-5 835611-91-1

835611-97-7 835611-99-9 835612-01-6
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(curable ink containing; jet-printing ink compns. containing epoxy compds. and
their use in image formation by UV irradiation)
IT 835612-03-8P 835612-05-0P 835612-07-2P 835612-09-4P 835612-10-7P
835612-11-8P 835612-12-9P 835612-13-0P 835612-14-1P 835612-15-2P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(cured ink; jet-printing ink compns. containing epoxy compds. and their use
in image formation by UV irradiation)
IT 6493-79-4P, Methyl-(4-methyl-3-cyclohexenecarboxylate) 39155-38-9P
744910-18-7P 744910-27-8P 744910-51-8P 805236-02-6P 805236-03-7P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(epoxy compound from; jet-printing ink compns. containing epoxy compds. and
their use in image formation by UV irradiation)
IT 57-55-6, 1,2-Propanediol, reactions 78-79-5, Isoprene, reactions
96-33-3, Methyl acrylate 106-89-8, Epichlorohydrin, reactions
107-02-8, Acrolein, reactions 107-21-1, Ethylene glycol, reactions
108-30-5, Succinic anhydride, reactions 126-30-7, 2,2-Dimethyl-propane-1,3-diol
RL: RCT (Reactant); RACT (Reactant or reagent)
(epoxy compound from; jet-printing ink compns. containing epoxy compds. and
their use in image formation by UV irradiation)
IT 18393-55-0D, Triphenyl sulfonium, salts 104558-95-4, Cyracure UVI 6990
146062-15-9 205944-57-6, Adeka Optomer SP 152 835612-17-4
835612-19-6
RL: CAT (Catalyst use); USES (Uses)
(photoacid generator, ink containing; jet-printing ink compns. containing epoxy compds. and their use in image formation by UV irradiation)

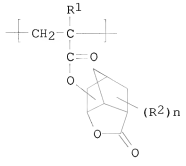
L8 ANSWER 7 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 141:44851 CA
ED Entered STN: 08 Jul 2004
TI Sulfonium salts and their chemically amplified positive resist compositions giving fine sharp patterns
IN Yamada, Airi; Uetani, Yasunori; Kamabuchi, Akira
PA Sumitomo Chemical Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 31 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F020-38
ICS C07C381-12; G03F007-004; G03F007-039; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
FAN.CNT 1
PATENT NO. KIND DATE APPLICATION NO. DATE

| | | | | | | |
|---|---|---|---|---|---|---|
| PI | JP 2004162040 | | A | 20040610 | JP 2003-354759 | 20031015 |
| | US 2004138353 | | A1 | 20040715 | US 2003-682038 | 20031010 |
| | US 7160669 | | B2 | 20070109 | | |
| | US 2007123674 | | A1 | 20070531 | US 2006-643662 | 20061222 |
| PRAI | JP 2002-301517 | | A | 20021016 | | |
| | US 2003-682038 | | A3 | 20031010 | | |

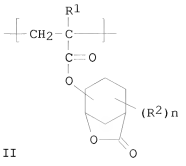
CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2004162040 | ICM | C08F020-38 |
| | ICS | C07C381-12; G03F007-004; G03F007-039; H01L021-027 |
| | IPCI | C08F0020-38 [ICM,7]; C08F0020-00 [ICM,7,C*]; C07C0381-12 [ICS,7]; C07C0381-00 [ICS,7,C*]; G03F0007-004 [ICS,7]; G03F0007-039 [ICS,7]; H01L0021-027 [ICS,7]; H01L0021-02 [ICS,7,C*] |
| | IPCR | C07C0381-00 [I,C*]; C07C0381-12 [I,A]; C08F0020-00 [I,C*]; C08F0020-38 [I,A]; G03F0007-004 [I,A]; G03F0007-004 [I,C*]; G03F0007-039 [I,A]; G03F0007-039 [I,C*]; H01L0021-02 [I,C*]; H01L0021-027 [I,A] |
| | FTERM | 2H025/AA01; 2H025/AA02; 2H025/AC04; 2H025/AC08; 2H025/AD03; 2H025/BE07; 2H025/BG00; 2H025/CC20; 2H025/FA03; 2H025/FA12; 2H025/FA17; 4H006/AA01; 4H006/AA03; 4H006/AB92; 4J100/AB07Q; 4J100/AK32R; 4J100/AL08P; 4J100/AL08Q; 4J100/AR11R; 4J100/BA15P; 4J100/BA15Q; 4J100/BA56P; 4J100/BA58P; 4J100/BB18P; 4J100/BC09Q; 4J100/BC43P; 4J100/BC53Q; 4J100/CA01; 4J100/CA03; 4J100/CA04; 4J100/CA05; 4J100/JA37 |
| US 2004138353 | IPCI | G03F0007-039 [I,A] |
| | IPCR | C07C0381-00 [I,C*]; C07C0381-12 [I,A]; C08K0005-00 [I,C*]; C08K0005-41 [I,A]; G03F0007-004 [I,C*]; G03F0007-004 [I,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A] |
| | NCL | 524/155.000 |
| US 2007123674 | IPCI | C08F0028-02 [I,A]; C08F0028-00 [I,C*] |
| | IPCR | C08F0028-00 [I,C]; C08F0028-02 [I,A]; C07C0381-00 [I,C*]; C07C0381-12 [I,A]; C08K0005-00 [I,C*]; C08K0005-41 [I,A]; G03F0007-004 [I,C*]; G03F0007-004 [I,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A] |
| | NCL | 526/286.000; 526/923.000 |
| | ECLA | G03F007/004D; C07C381/12; G03F007/039C1; |

G03F007/039C1S
OS MARPAT 141:44851
GI




II




III

AB The sulfonium salts are represented by the general formula Q5SO3-Q1Q2S+CHQ3CO2(CQ6CQ7O)n1Q4 (I; Q1, Q2 = C1-6 alkyl, C3-10 cycloalkyl; Q3, Q6, Q7 = H, Me; Q4 = hydrocarbyl bearing CO, CO2, O, and/or unsatd. bond, C3-10 cycloalkyl bearing ≥1 of these bond or functional group; n1 ≥0 integer; Q5SO3- = organic sulfonate ion; Q5 = C1-8 perfluoroalkyl, C1-8 alkyl, aromatic or camphor which may bear C6-12 substituent). The chemical amplified pos. resist compns. contain (A) ≥1 acid generators selected from sulfonium salts I and polymers derived from I and (B) resins containing mer units which bear acid-labile groups, are insol. or slightly soluble in alkalis, and become soluble in alkalis with acids. Preferably, the mer units of the resins B comprise 2-alkyl-2-adamantyl (meth)acrylate and/or 1-(1-adamantyl)-1-alkylalkyl (meth)acrylate. The resins B may further contain ≥1 mer units derived from m- or p-hydroxystyrene, 3-hydroxy-1-adamantyl (meth)acrylate, 3,5-dihydroxy-1-adamantyl (meth)acrylate, (meth)acryloyloxy-γ-butyrolactone whose lactone ring may be substituted with alkyl, and alicyclic lactones II and III (R1 = H, Me, CF3; R2 = Me, CF3; n = 1-3). The resins B may further contain mer units derived from 2-norbornene and aliphatic unsatd. dicarboxylic acid anhydride. The resist compns. may further contain triphenylsulfonium salts Ph3S+ P6SO3- and/or diphenyliodonium salts Ph2I+ P7SO3- (these Ph have H, OH, C1-6 alkyl, or C1-6 alkoxy; P6SO3-, P7SO3- = organic sulfonate ion; ) and amines as quenchers.

ST sulfonium salt photoacid generator pos photoresist; chem amplified resist pos sulfonium salt; line edge roughness improvement pos photoresist; deep UV resist pos sulfonium salt

IT Amines, uses
RL: MOA (Modifier or additive use); USES (Uses)
(quencher; sulfonium salts and their chemical amplified pos. resist compns. giving fine sharp patterns)

IT Positive photoresists
(sulfonium salts and their chemical amplified pos. resist compns. giving fine sharp patterns)

IT Sulfonium compounds
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(sulfonium salts and their chemical amplified pos. resist compns. giving

fine sharp patterns)
IT 195000-67-0, α-Methacryloyloxy-γ-butyrolactone-2-methyl-2-adamantyl methacrylate copolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(IHM 55-10K; sulfonium salts and their chemical amplified pos. resist compns. giving fine sharp patterns)
IT 177034-80-9, 4-Methylphenyldiphenylsulfonium perfluorooctanesulfonate 284474-28-8 700877-76-5
RL: CAT (Catalyst use); USES (Uses)
(photoacid generator; sulfonium salts and their chemical amplified pos. resist compns. giving fine sharp patterns)
IT 700877-74-3P 700877-75-4P
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(photoacid generator; sulfonium salts and their chemical amplified pos. resist compns. giving fine sharp patterns)
IT 24544-04-5, 2,6-Diisopropylaniline
RL: MOA (Modifier or additive use); USES (Uses)
(quencher; sulfonium salts and their chemical amplified pos. resist compns. giving fine sharp patterns)
IT 258879-89-9P, 2-Ethyl-2-adamantyl methacrylate-3-hydroxy-1-adamantyl methacrylate-α-methacryloyloxy-γ-butyrolactone copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(sulfonium salts and their chemical amplified pos. resist compns. giving
fine sharp patterns)

L8 ANSWER 8 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 140:383120 CA
ED Entered STN: 27 May 2004
TI Positive-working photoresist compositions for far-UV microlithography
IN Sato, Kenichiro; Kodama, Kunihiko
PA Fuji Photo Film Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 64 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G03F007-039
ICS C08F002-50; C08F220-28; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2004138790 | A | 20040513 | JP 2002-303088 | 20021017 |
| PRAI JP 2002-303088 | | 20021017 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2004138790 | ICM | G03F007-039 |
| | ICS | C08F002-50; C08F220-28; H01L021-027 |
| | IPCI | G03F0007-039 [ICM,7]; C08F0002-50 [ICS,7]; C08F0002-46 [ICS,7,C*]; C08F0220-28 [ICS,7]; C08F0220-00 [ICS,7,C*]; H01L0021-027 [ICS,7]; H01L0021-02 |

[ICS,7,C*]

IPCR C08F0002-46 [I,C*]; C08F0002-50 [I,A]; C08F0220-00 [I,C*]; C08F0220-28 [I,A]; G03F0007-039 [I,A]; G03F0007-039 [I,C*]; H01L0021-02 [I,C*]; H01L0021-027 [I,A]

FTERM 2H025/AA01; 2H025/AA04; 2H025/AA09; 2H025/AA11; 2H025/AA14; 2H025/AB16; 2H025/AC04; 2H025/AC08; 2H025/AD03; 2H025/BE07; 2H025/BE10; 2H025/BG00; 2H025/CB14; 2H025/CB41; 2H025/CB43; 2H025/CB45; 4J011/QA03; 4J011/SA87; 4J011/UA01; 4J011/UA04; 4J011/VA01; 4J011/WA01; 4J100/AL08P; 4J100/AL08Q; 4J100/AL08R; 4J100/AL08S; 4J100/AL08T; 4J100/BA03P; 4J100/BA03R; 4J100/BA03S; 4J100/BA12P; 4J100/BA15P; 4J100/BA16P; 4J100/BC09Q; 4J100/BC09R; 4J100/BC12Q; 4J100/BC53S; 4J100/BC53T; 4J100/CA04; 4J100/CA05; 4J100/CA06; 4J100/FA19; 4J100/JA38

OS MARPAT 140:383120

GI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AB The compns., which show reduced development defects such as bridging, less PCD (post-coating delay) and PED (post-exposure delay), and wide process margin, and are useful for microphotofabrication with far-IR such as ArF excimer laser light, contain (A) resins which show increased alkali solubility upon action of acids and comprise (A1) [CH2CR1(CO2LZ)] (R1 = H, alkyl; L = direct bond, alkylene, ether bond, ester bond, CO, their combination; Z = CO2H, OH; COCH2COR4; R4 = hydrocarbyl), (A2) [CH2CHR2(ACO2ALG)] [R2 = H, Me; A = direct bond, linking group; ALG = I (R11 = Me, Et, Pr, CHMe2, Bu, CH2CHMe2, CHMeEt; Z = atomic group forming alicyclyl); CR12R13R14 (R12-R14 = C1-4 alkyl, alicyclyl; ≥1 R12-R14 = alicyclyl), CHR16OR15(R15, R16 = C1-4 alkyl, alicyclyl; R15 and/or R16 = alicyclyl), CR19R21CR17:CR18R20 (R17-R21 = H, C1-4 alkyl, alicyclyl; ≥1 R17-R21 = alicyclyl; R19 and/or R21 = C1-4 alkyl, alicyclyl), CR22R25CHR23COR24 (R22-R25 = H, C1-4 alkyl, alicyclyl; ≥1 of R22-R25 = alicyclyl; R23 and R24 may be bonded to form a ring)], and (A3) [CH2CR3[A3Z3(OH)p]] [R3 = H, Me; A3 = direct bond, linking group; Z3 = (p + 1)-valent alicyclyl; p = 1-3], (B) R1bR2bR3bS+ X- (R1b-R3b = alkyl; X- = anion) which generate acids upon irradiation with actinic ray or radiation, and (C) solvents.

ST far UV pos photoresist trialkylsulfonium salt photoacid generator; adamantyl acrylate copolymer trialkylsulfonium salt pos photoresist

IT Positive photoresists
(UV; far-UV pos.-working photoresist compns. containing alkali-solubilizable resins and trialkylsulfonium salts for reduced post-coating and post-exposure delays and wide process margin)
IT 66003-78-9 144317-44-2 258872-05-8 347193-29-7 383367-32-6 414911-52-7 677351-28-9 677351-30-3 683810-50-6
RL: CAT (Catalyst use); USES (Uses)
(far-UV pos.-working photoresist compns. containing alkali-solubilizable resins and trialkylsulfonium salts for reduced post-coating and post-exposure delays and wide process margin)
IT 680223-02-3P 680223-07-8P 680223-09-0P 683809-91-8P 683810-47-1P 683810-48-2P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(far-UV pos.-working photoresist compns. containing alkali-solubilizable resins and trialkylsulfonium salts for reduced post-coating and post-exposure delays and wide process margin)

L8 ANSWER 9 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 140:261271 CA
ED Entered STN: 08 Apr 2004
TI High-performance 193-nm photoresist materials based on a new class of polymers containing spaced ester functionalities
AU Khojasteh, Mahmoud; Chen, K. Rex; Kwong, Ranee W.; Lawson, Margaret C.; Varanasi, Pushkara R.; Patel, Kaushal S.; Kobayashi, Eiichi
CS IBM Microelectronics, Hopewell Junction, 12533, USA
SO Proceedings of SPIE-The International Society for Optical Engineering (2003), 5039(Pt. 1, Advances in Resist Technology and Processing XX), 187-194
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
AB ArF lithog. has been selected as the imaging method for the 90 nm technol.
node. Manufacturing related issues will have to be addressed when designing
advanced 193 nm resists that are production worthy. Post exposure bake (PEB)
sensitivity, dissoln. properties and process window are some issues that need continuous improvement. Initially the authors investigation focused on a cyclic olefin (CO) platform which led to a better understanding of the relationship between polymer structure and phys. properties and how to improve cyclic olefin resist performance. Since then the authors developed a new class of acrylate polymers with pendant "spaced ester" functionality. The authors investigated the potential use of "spaced ester" functionality on improving the lithog. performance of CO and acrylate resist platforms. The authors found that with "spaced ester" as pending group in CO polymer structures, it can lower the Tg and improve the dissoln.

properties of the CO resists. Resists formulated with acrylate containing "spaced ester" group exhibit excellent PEB temperature sensitivity (1 nm/° C), and are soluble in PGMEA. In addition, the authors demonstrated sub-100 nm resolution with excellent process window through formulation optimization for acrylate based resists. This paper will focus on the "spaced ester" based polymer design, material properties; resist characteristics, and the lithog. performance for logic dense line applications.

ST polymer design chem amplified photoresist vacuum UV lithog; cyclic olefin acrylate polymer spaced ester functionality photoresist

IT Onium compounds
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(iodonium, photoacid generator; properties and lithog. performance of 193-nm photoresists based on cyclic olefin or acrylate platforms containing spaced ester functionalities)

IT Dissolution
(kinetics; properties and lithog. performance of 193-nm photoresists based on cyclic olefin or acrylate platforms containing spaced ester functionalities)

IT Thermal decomposition
(properties and lithog. performance of 193-nm photoresists based on cyclic olefin or acrylate platforms containing spaced ester functionalities)

IT Photoresists
(vacuum-UV, chemical amplified; properties and lithog. performance of 193-nm photoresists based on cyclic olefin or acrylate platforms containing spaced ester functionalities)

IT 84540-57-8, Propylene glycol monomethyl ether acetate
RL: NUU (Other use, unclassified); USES (Uses)
(casting solvent; properties and lithog. performance of 193-nm photoresists based on cyclic olefin or acrylate platforms containing spaced ester functionalities)

IT 75-59-2, Tetramethylammonium hydroxide
RL: NUU (Other use, unclassified); USES (Uses)
(developer; properties and lithog. performance of 193-nm photoresists based on cyclic olefin or acrylate platforms containing spaced ester functionalities)

IT 195154-78-0 670249-83-9 670249-84-0 670249-85-1
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(properties and lithog. performance of 193-nm photoresists based on cyclic olefin or acrylate platforms containing spaced ester functionalities)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Kumar, U; Proc SPIE 1997, V3049, P135 CA
(2) Lin, Q; Proc SPIE 2001, V4345, P78 CA
(3) Varanasi, P; Proc SPIE 1999, V3678, P51 CA

L8 ANSWER 10 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 139:92748 CA
ED Entered STN: 31 Jul 2003

TI Novel sulfonyldiazomethane compounds, photoacid generators, photoresists therewith, and photolithography employing the same
IN Osawa, Yoichi; Kobayashi, Katsuhiro; Maeda, Kazuki
PA Shin-Etsu Chemical Industry Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 51 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C07C381-14
ICS G03F007-004; G03F007-039; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 23
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 2003192665 | A | 20030709 | JP 2002-275029 | 20020920 |
| | JP 3991214 | B2 | 20071017 | | |
| | US 2003180653 | A1 | 20030925 | US 2002-255770 | 20020927 |
| | US 6689530 | B2 | 20040210 | | |
| | TW 225968 | B | 20050101 | TW 2002-91122378 | 20020927 |
| PRAI | JP 2001-300345 | A | 20010928 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2003192665 | ICM | C07C381-14 |
| | ICS | G03F007-004; G03F007-039; H01L021-027 |
| | IPCI | C07C0317-28 [I,A]; C07C0317-00 [I,C*]; G03F0007-004 [I,A]; G03F0007-039 [I,A]; H01L0021-027 [I,A]; H01L0021-02 [I,C*] |
| | IPCR | G03F0007-004 [I,C*]; G03F0007-004 [I,A]; C07C0381-00 [I,C*]; C07C0381-14 [I,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A]; H01L0021-02 [I,C*]; H01L0021-027 [I,A] |
| US 2003180653 | IPCR | C07C0317-00 [I,C*]; C07C0317-28 [I,A]; G03F0007-004 [I,C*]; G03F0007-004 [I,A]; G03F0007-038 [N,C*]; G03F0007-038 [N,A]; G03F0007-039 [N,C*]; G03F0007-039 [N,A] |
| | NCL | 430/170.000; 430/270.100; 430/905.000; 534/558.000 |
| TW 225968 | IPCR | C07C0317-00 [I,C*]; C07C0317-28 [I,A]; G03F0007-004 [I,C*]; G03F0007-004 [I,A]; G03F0007-038 [N,C*]; G03F0007-038 [N,A]; G03F0007-039 [N,C*]; G03F0007-039 [N,A] |

OS MARPAT 139:92748
AB The compds. are [[Me(CH2)mOn]RkC6H5-n-kSO2]pC:N2(GR3)q [R = H, C1-4 alkyl(oxy); G = SO2, CO; R3 = C1-10 alkyl, C6-14 aryl; p = 1, 2; q = 0, 1; p + q = 2; n = 0, 1; m = 3-11; k = 0-4]. Photoresists containing acid-labile alkali-developable resins and radiation-sensitive acid generators including the compds. are also claimed. Further claimed is photolithog. wherein the photoresists are applied on substrates, annealed, exposed to ≤300-nm actinic rays or electron beams, (annealed,) and developed. The photoresists produce patterns containing min. number of foreign

matter and having sharp profile.
ST amplified photoresist acid generator sulfonyldiazomethane photolithog; pattern profile development scum prevention photoresist PAG; butoxyphenylsulfonyldiazomethane photoacid generator amplified photoresist
IT Photoresists
(chemical amplified; novel sulfonyldiazomethane compds. for photoacid generators of chemical amplified photoresists)
IT Photolithography
(novel sulfonyldiazomethane compds. for photoacid generators of chemical amplified photoresists)
IT 532411-47-5P 552840-41-2P 552840-43-4P 552840-44-5P
RL: CAT (Catalyst use); CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(novel sulfonyldiazomethane compds. for photoacid generators of chemical amplified photoresists)
IT 552840-31-0P 552840-33-2P 552840-35-4P 552840-37-6P 552840-39-8P 552840-45-6P 552840-47-8P
RL: CAT (Catalyst use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(novel sulfonyldiazomethane compds. for photoacid generators of chemical amplified photoresists)
IT 24979-70-2D, Poly(p-hydroxystyrene), ethoxyethylated, butoxycarboxylated 130501-59-6, Poly(p-hydroxystyrene) acetate 159296-87-4, tert-Butyl acrylate-p-hydroxystyrene copolymer 326925-68-2, 1-Ethylcyclopentyl methacrylate-p-hydroxystyrene copolymer 345580-95-2, 1-Ethylcyclopentyl methacrylate-p-hydroxystyrene-styrene copolymer 552840-49-0 552840-50-3 552840-52-5D, tert-butoxycarboxylated 552840-54-7
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES
(Uses)
(novel sulfonyldiazomethane compds. for photoacid generators of chemical amplified photoresists)
IT 1129-79-9P 1135-49-5P 30752-19-3P 30752-20-6P 39969-57-8P 97412-69-6P 114833-57-7P 123883-51-2P 177217-25-3P 177217-27-5P 552840-56-9P 552840-58-1P 552840-59-2P 552840-61-6P 552840-63-8P 552840-65-0P 552840-68-3P 552840-69-4P 552840-70-7P 552840-74-1P 552840-77-4P 552840-81-0P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(novel sulfonyldiazomethane compds. for photoacid generators of chemical amplified photoresists)
IT 59-50-7, 4-Chloro-3-methylphenol 89-83-8 95-87-4, p-Xylenol 106-41-2, 4-Bromophenol 109-65-9 111-25-1 111-83-1 112-29-8, n-Decylbromide 143-15-7, n-Dodecyl bromide 2374-05-2, 2,6-Dimethyl-4-bromophenol 2416-94-6, 2,3,6-Trimethylphenol 51554-93-9, 1-Bromo-4-octylbenzene
RL: RCT (Reactant); RACT (Reactant or reagent)
(novel sulfonyldiazomethane compds. for photoacid generators of chemical amplified photoresists)

L8 ANSWER 11 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 138:392956 CA
ED Entered STN: 12 Jun 2003
TI Highly transparent resist platforms for 157-nm microlithography: an update
AU Vohra, Vaishali Raghu; Douki, Katsuji; Kwark, Young-Je; Liu, Xiang-Qian; Ober, Christopher Kemper; Bae, Young C.; Conley, Will; Miller, Daniel; Zimmerman, Paul
CS Dep. Mater. Sci. Eng., Cornell Univ., Ithaca, NY, 14853, USA
SO Proceedings of SPIE-The International Society for Optical Engineering (2002), 4690(Pt. 1, Advances in Resist Technology and Processing XIX), 84-93
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Hexafluoroisopropyl alc.-functionalized acrylate monomers and their (co)polymers were prepared as photoresist platforms for 157 nm imaging. In order to balance transparency with other desirable traits such as etch resistance, the authors developed several copolymer systems. One is using 2-Me adamantyl methacrylate as a comonomer, and the copolymer system showed better dissoln. contrast compared to the copolymer with tetrahydropyranyl methacrylate without sacrificing transparency. To further improve the absorption properties at 157 nm, monomers having α -trifluoromethyl group were prepared and polymerized in anionic mechanism. The product polymer was unexpectedly transparent at 157 nm (A = 1.6 μm -1) in spite that all the monomers contain carbonyl group. The second system is the copolymer with p-tert-butoxytetrafluorostyrene. P-Hydroxy-tetrafluorostyrene and p-tert-butoxy-tetrafluorostyrene were polymerized radically using AIBN in good yield, and the two resulting polymers showed distinctive solubility differences in aqueous base solution Finally, this paper describes the synthesis of new monomers having fluorine (e.g CF3-group) in the vicinity of the double bond to improve transparency at 157 nm. Due to the lower electron d. of the double bond, these monomers can be copolymd. with electron-rich vinyl monomers using radical initiators.
ST highly transparent photoresist platform microlithog; vacuum UV photolithog
highly transparent resist platform
IT Fluoropolymers, properties
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(design and evaluation of monomers and polymers for highly transparent chemical amplified photoresist platforms for 157-nm microlithog.)
IT Photoresists
(vacuum-UV, chemical amplified; design and evaluation of monomers and polymers for highly transparent chemical amplified photoresist platforms
for 157-nm microlithog.)
IT 403814-65-3P, p-Hydroxytetrafluorostyrene homopolymer

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(design and evaluation of highly transparent resist platforms for 157-nm microlithog. based on tetrafluorostyrene polymers)

IT 403814-66-4P, p-tert-Butoxytetrafluorostyrene homopolymer
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(design and evaluation of highly transparent resist platforms for 157-nm microlithog. based on tetrafluorostyrene polymers)

IT 479072-80-5DP, hydrolyzed, ethers with tetrahydropyran 524935-40-8P
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant
or reagent); USES (Uses)
(design and evaluation of highly transparent resist platforms for 157-nm microlithog. based on trifluoromethylvinyl acetate)

IT 524935-40-8D, hydrolyzed
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(design and evaluation of highly transparent resist platforms for 157-nm microlithog. based on trifluoromethylvinyl acetate)

IT 479072-80-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(design and evaluation of highly transparent resist platforms for 157-nm microlithog. based on trifluoromethylvinyl acetate)

IT 75-59-2, Tetramethylammonium hydroxide
RL: TEM (Technical or engineered material use); USES (Uses)
(developer; lithog. evaluation of highly transparent photoresist platforms for 157-nm microlithog.)

IT 479072-79-2P 479072-82-7P 479072-84-9P
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(lithog. evaluation of hexafluoroisopropyl alc.-functionalized acrylate monomers and their polymers as chemical amplified photoresist for 157 nm exposures)

IT 1116-76-3, Trioctylamine 2052-49-5, Tetrabutylammonium hydroxide
RL: TEM (Technical or engineered material use); USES (Uses)
(lithog. evaluation of highly transparent photoresist platforms for 157-nm microlithog.)

IT 385422-30-0P, p-Hydroxytetrafluorostyrene
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(monomer; design and evaluation of highly transparent resist platforms for 157-nm microlithog.)

IT 343305-41-9P, p-tert-Butoxytetrafluorostyrene
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(monomer; design and evaluation of highly transparent resist platforms for 157-nm microlithog. based on tetrafluorostyrene polymers)

IT 646-97-9 695-12-5 19701-19-0 196314-61-1 242812-08-4
369375-16-6
479072-81-6 479072-89-4
RL: NUU (Other use, unclassified); USES (Uses)
(monomer; design and evaluation of monomers for highly transparent resist platforms for 157-nm microlithog.)

IT 188739-86-8P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(monomer; polymerization with hexafluoroisopropyl alc.-functionalized acrylate monomer)
IT 479072-78-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(monomer; polymerization with methyladamantyl(trifluoromethyl)acrylate)
IT 144317-44-2, Triphenylsulfonium perfluoro-1-butanesulfonate
RL: TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; lithog. evaluation of highly transparent photoresist platforms for 157-nm microlithog.)
IT 479072-77-0P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(reaction with trifluoromethylacryloyl chloride)
IT 84540-57-8, Propylene glycol methyl ether acetate
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; lithog. evaluation of highly transparent photoresist platforms for 157-nm microlithog.)
RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Bae, Y; J Photopolym Sci Technol 2001, V14 CA
(2) Bae, Y; Polym Prepr 2000, V41(2), P1586 CA
(3) Bae, Y; Polym Prepr 2001, V42(2), P403 CA
(4) Chiba, T; J Photopolym Sci Technol 2000, V13, P657 CA
(5) Crawford, M; Proc SPIE-Int Soc Opt Eng 2000, V3999, P357 CA
(6) Feiring, A; WO 0067072 2000 CA
(7) Hon, Y; Tetrahedron Lett 1999, V40, P2389 CA
(8) Ito, H; ACS Symp Ser 1998, V706, P449
(9) Ito, H; J Photopolym Sci Technol 2001, V14, P583 CA
(10) Ito, H; Macromolecules 1982, V15, P915 CA
(11) Ito, H; Poly Mater Sci Eng 1997, V77, P449 CA
(12) Ito, H; Proc SPIE-Int Soc Opt Eng 2001, V4345, P274
(13) Kunz, R; J Vac Sci Technol B 1999, V17, P3267 CA
(14) MacDonald, S; Acc Chem Res 1994, V27, P6
(15) Nozaki, K; Chem Mater 1994, V6, P1492 CA
(16) Patterson, K; Proc SPIE-Int Soc Opt Eng 2000, V3999, P365 CA
(17) Przybilla, K; Adv Mater 1992, V4, P239 CA
(18) Przybilla, K; Proc SPIE-Int Soc Opt Eng 1992, V1672, P500 CA
(19) Reichmanis, E; Chem Mater 1991, V3, P394 CA
(20) Schmaljohann, D; J Photopolym Sci Technol 2000, V13, P451 CA
(21) Schmaljohann, D; PMSE Preprints 2000, V83, P445 CA
(22) Schmaljohann, D; Proc SPIE-Int Soc Opt Eng 2000, V3999, P330 CA
(23) Snow, A; J Appl Polym Sci 1991, V43, P1659 CA
(24) Willson, C; Polym Eng Sci 1983, V23, P1000 CA

L8 ANSWER 12 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 138:229130 CA
ED Entered STN: 03 Apr 2003
TI Photospeed considerations for extreme ultraviolet lithography resists
AU Dentinger, Paul M.; Hunter, Luke L.; O'Connell, Donna J.; Gunn, Scott; Goods, Daniel; Fedynyshyn, Theodore H.; Goodman, Russell B.; Astolfi,

David K.
CS Sandia National Laboratories, Livermore, CA, 94550, USA
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (2002), 20(6), 2962-2967
CODEN: JVTBD9; ISSN: 0734-211X
PB American Institute of Physics
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Photospeed is a prime consideration for wafer throughput of extreme-UV (EUV) lithog. Faster photoresists addnl. provide system advantages such as less thermal management of the mirrors and mask, and potentially increased component lifetimes. However, there are some predicted detrimental considerations when using fast photoresists such as shot noise. The authors report details of the formulation of photoresists exposed at 248 nm and identical formulations exposed at 13.4 nm. Compns. typically contained co- or terpolymers of poly-4-hydroxystyrene, tert-Bu acrylate and as an option, styrene, a photoacid generator of bis-tert-butylphenyl iodonium camphorsulfonate or perfluorobenzensulfonate and tetrabutylammonium or triphenylsulfonium hydroxide base. With these formulations, the EUV photospeed was varied from 34 to 2.7 mJ/cm2. Scanning electron microscope anal. was done for all wafers at Sandia using GORA software to determine the line-edge roughness (LER). Identical formulations were exposed at photon dense deep-UV (DUV) wavelengths and comparatively photon-sparse EUV wavelengths. Therefore, ratioing the LER of identical formulations exposed at DUV minimizes the confounding effects of formulation changes that affect dissoln., resolution, etc. A plot of the line-edge roughness ratio of LEREUV/LERDUV as a function of the photospeed was used to gain insight into the effect of shot noise on the LER of dense lines. If shot noise effects were dominating the LER for EUV, then the ratio would increase above the nominal value as the dose to size was decreased. It is clear that the current generation of DUV resists, with the invention of no new material required, can be reformulated to satisfy the photospeed specification of 5 mJ/cm2 for EUV lithog. and no shot noise effects have been observed
ST photospeed extreme UV lithog resist formulation; absorbed photon distribution photoresist extreme UV lithog
IT Photoresists
(extreme-UV; photospeed of resist composition for extreme-UV lithog. and effect of absorbed photon distribution of identical formulations under deep-UV and extreme-UV exposures)
IT 2052-49-5, Tetrabutylammonium hydroxide 17287-03-5, Trimethylsulfonium hydroxide 58621-56-0, Triphenylsulfonium hydroxide
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(base; photospeed of resist composition for extreme-UV lithog. and effect of absorbed photon distribution of identical formulations under deep-UV and extreme-UV exposures)
IT 194861-06-8, Bis-tert-butylphenyliodonium camphorsulfonate 218151-20-3,

Di-tert-butylphenyliodonium perfluorobutanesulfonate 220122-68-9,
Di-tert-butylphenyliodonium perfluorobenzenesulfonate 240435-11-4,
Di-tert-butylphenyliodonium perfluorooctanesulfonate
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; photospeed of resist composition for extreme-UV lithog. and effect of absorbed photon distribution of identical formulations under deep-UV and extreme-UV exposures)
IT 159296-87-4, Tert-Butyl acrylate-4-hydroxystyrene copolymer
200808-68-0, Tert-Butyl acrylate-4-hydroxystyrene-styrene copolymer
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(photospeed of resist composition for extreme-UV lithog. and effect of absorbed photon distribution of identical formulations under deep-UV and extreme-UV exposures)
RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Berger, K; Absolute Dosimetry for Extreme Ultraviolet Lithography 2000
(2) Brainard, R; J Vac Sci Technol B 1999, V17, P3384 CA
(3) Brainard, R; Resist Development for EUV Lithography 2001
(4) Cardinale, G; J Vac Sci Technol B 1999, V17, P2970 CA
(5) Dentinger, P; Emerging Lithographic Technologies 2000, VIV
(6) Dentinger, P; J Vac Sci Technol B 2000, V18, P3364 CA
(7) Everhart, T; Materials for Microlithography 1984, P5 CA
(8) Gallatin, G; Lithography for Semiconductor Manufacturing 2001, VII
(9) Neureuther, A; J Vac Sci Technol B 1988, V6, P167 CA
(10) O'Brien, S; Optical Microlithography 2001, VXIV
(11) Rau, N; J Vac Sci Technol B 1998, V16, P3784 CAPLUS
(12) Smith, H; J Vac Sci Technol B 1986, V4, P148
(13) Smith, H; J Vac Sci Technol B 1988, V6, P346 CA
(14) Sutherland, I; Basic Limitation in Microcircuit Fabrication Technology 1976, P47
(15) Szmanda, C; J Vac Sci Technol B 1999, V17, P3356 CA

L8 ANSWER 13 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 137:370814 CA
ED Entered STN: 12 Dec 2002
TI Synthesis of silyl-containing (meth)acrylate-based copolymers and bilayer resist compositions therefrom
IN Lee, Haiwon; Kim, Sung Soo
PA Hanyang Hak Won Co., Ltd., S. Korea
SO U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM C08F124-00
INCL 526266000
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 35, 74
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 2002173609 | A1 | 20021121 | US 2002-144110 | 20020510 |
| | US 6596830 | B2 | 20030722 | | |

| | | | | | |
|---|---|---|---|---|---|
| | KR 2002086177 | A | 20021118 | KR 2001-25960 | 20010511 |
| PRAI | KR 2001-25960 | A | 20010511 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| US 2002173609 | ICM | C08F124-00 |
| | INCL | 526266000 |
| | IPCI | C08F0124-00 [ICM,7] |
| | IPCR | C08F0230-00 [I,C*]; C08F0230-08 [I,A]; G03F0007-004 [N,C*]; G03F0007-004 [N,A]; G03F0007-075 [I,C*]; G03F0007-075 [I,A] |
| | NCL | 526/266.000; 526/279.000; 526/319.000 |
| | ECLA | C08F230/08; G03F007/075M2 |
| KR 2002086177 | IPCI | G03F0007-075 [ICM,7] |
| | IPCR | C08F0230-00 [I,C*]; C08F0230-08 [I,A]; G03F0007-004 [N,C*]; G03F0007-004 [N,A]; G03F0007-075 [I,C*]; G03F0007-075 [I,A] |
| | ECLA | C08F230/08; G03F007/075M2 |

AB The title copolymers, for use in a chemical amplified resist compns., are generally obtained from copolymn. of a silyl-containing (meth)acrylate monomer (A) and a lactone-containing (meth)acrylate monomer (B), wherein A is synthesized from a silyl-containing alc. with (meth)acryloyl chloride, and B is synthesized from a OH-containing lactone with (meth)acryloyl chloride. Thus, reacting [(CH3)3SiCH2]2CH2OH, prepared from Grignard reaction of (CH3)3SiCH2MgCl and HCOOEt, with methacryloyl chloride gave an A monomer, reacting pantolactone with methacryloyl chloride gave a B monomer, A and B were then polymerized at 65-70° in the presence of AIBN to give a title copolymer, 2 g of which was then dissolved in 16 g polypropylene glycol Me ether acetate with 0.02 g triarylsulfonium triflate, filtered and spin-coated on a silicon wafer treated with hexamethyldisilazane to form a resist layer.

ST silyl lactone contg methacrylate copolymer synthesis bilayer resist compn

IT Photoresists
(bilayer resist compns. using silyl- and lactone-containing (meth) acrylate copolymers)

IT Polymers, preparation
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(co-; synthesis of silyl- and lactone-containing (meth) acrylate copolymers suitable for bilayer resist compns.)

IT Resistors
(film; bilayer resist compns. using silyl- and lactone-containing (meth)
acrylate copolymers)

IT Sulfonic acids, uses
RL: MOA (Modifier or additive use); USES (Uses)
(salts, photoacid generator; bilayer resist compns. using silyl- and lactone-containing (meth)acrylate copolymers)

IT 79-50-5, dl-Pantoyl lactone
RL: RCT (Reactant); RACT (Reactant or reagent)
(in synthesis of lactone-containing methacrylate monomer for silyl- and lactone-containing (meth)acrylate copolymers)

IT 109-94-4, Ethyl formate 920-46-7, Methacryloyl chloride 2344-80-1, (Chloromethyl)trimethylsilane
RL: RCT (Reactant); RACT (Reactant or reagent)
(in synthesis of silyl-containing methacrylate monomer for silyl- and lactone-containing (meth)acrylate copolymers)
IT 17887-33-1P, 1,3-Bis(trimethylsilyl)-2-propanol
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(intermediate; in synthesis of silyl-containing methacrylate monomer for
silyl- and lactone-containing (meth)acrylate copolymers)
IT 156938-13-5P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(monomer; in synthesis of lactone-containing methacrylate monomer for silyl- and lactone-containing (meth)acrylate copolymers)
IT 195044-28-1P, 1,3-Bis(trimethylsilyl)isopropyl methacrylate
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(monomer; synthesis of silyl-containing methacrylate monomer for silyl- and
lactone-containing (meth)acrylate copolymers)
IT 475599-61-2P 475599-62-3P
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(synthesis of silyl- and lactone-containing (meth)acrylate copolymers suitable for bilayer resist compns.)
IT 7440-21-3, Silicon, miscellaneous
RL: MSC (Miscellaneous)
(wafer, substrate; bilayer resist compns. using silyl- and lactone-containing (meth)acrylate copolymers)

L8 ANSWER 14 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 137:39324 CA
ED Entered STN: 11 Jul 2002
TI (Meth)acrylate esters, starting alcohols for the preparation thereof, processes for preparing both, polymers of the esters, chemically amplifiable resist compositions, and method for forming patterns
IN Kamon, Yoshihiro; Fujiwara, Tadayuki; Kuwano, Hideaki; Momose, Hikaru; Koizumi, Atsushi
PA Mitsubishi Rayon Co., Ltd., Japan
SO PCT Int. Appl., 109 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
IC ICM C07D307-93
ICS C07D307-88; C07D493-18; C07D307-77; C07D493-18; C07D307-04; C07D307-33
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 27, 35, 38

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | WO 2002046179 | A1 | 20020613 | WO 2001-JP10628 | 20011205 |
| | W: KR, US | | | | |
| | RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR | | | | |
| | JP 2002234882 | A | 20020823 | JP 2001-366958 | 20011130 |
| | JP 2002275215 | A | 20020925 | JP 2001-368904 | 20011203 |
| | EP 1352904 | A1 | 20031015 | EP 2001-999568 | 20011205 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR | | | | |
| | TW 583182 | B | 20040411 | TW 2001-90130267 | 20011206 |
| | US 2004063882 | A1 | 20040401 | US 2003-433570 | 20030605 |
| | US 7041838 | B2 | 20060509 | | |
| | US 2005113538 | A1 | 20050526 | US 2004-974876 | 20041028 |
| | US 7339014 | B2 | 20080304 | | |
| PRAI | JP 2000-371712 | A | 20001206 | | |
| | JP 2001-1728 | A | 20010109 | | |
| | JP 2001-366958 | A | 20011130 | | |
| | JP 2001-368904 | A | 20011203 | | |
| | WO 2001-JP10628 | W | 20011205 | | |
| | US 2003-433570 | A3 | 20030605 | | |

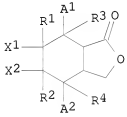
CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| WO 2002046179 | ICM | C07D307-93 |
| | ICS | C07D307-88; C07D493-18; C07D307-77; C07D493-18; C07D307-04; C07D307-33 |
| | IPCI | C07D0307-93 [ICM,7]; C07D0307-88 [ICS,7]; C07D0493-18 [ICS,7]; C07D0493-00 [ICS,7,C*]; C07D0307-77 [ICS,7]; C07D0307-04 [ICS,7]; C07D0307-33 [ICS,7]; C07D0307-00 [ICS,7,C*] |
| | IPCR | C07D0307-00 [I,C*]; C07D0307-88 [I,A]; C07D0307-93 [I,A]; C07D0493-00 [I,C*]; C07D0493-18 [I,A]; C08F0220-00 [I,C*]; C08F0220-18 [I,A]; C08F0220-28 [I,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A] |
| | ECLA | C07D493/18+307C+307C+307B+3; C08F220/18; C08F220/28; G03F007/039C1S; C07D307/88; C07D307/93 |
| JP 2002234882 | IPCI | C07D0307-00 [ICM,7]; C07D0307-88 [ICS,7]; C07D0493-18 [ICS,7]; C07D0493-00 [ICS,7,C*] |
| | IPCR | C07D0307-00 [I,C*]; C07D0307-00 [I,A]; C07D0307-88 [I,A]; C07D0493-00 [I,C*]; C07D0493-18 [I,A] |
| JP 2002275215 | IPCI | C08F0020-28 [ICM,7]; C08F0020-00 [ICM,7,C*]; G03F0007-039 [ICS,7]; H01L0021-027 [ICS,7]; H01L0021-02 [ICS,7,C*] |
| | IPCR | G03F0007-039 [I,C*]; G03F0007-039 [I,A]; C08F0020-00 [I,C*]; C08F0020-28 [I,A]; H01L0021-02 [I,C*]; H01L0021-027 [I,A] |
| EP 1352904 | IPCI | C07D0307-93 [ICM,7]; C07D0307-88 [ICS,7]; C07D0493-18 [ICS,7]; C07D0493-00 [ICS,7,C*]; C07D0307-77 [ICS,7]; C07D0307-04 [ICS,7]; C07D0307-33 [ICS,7]; C07D0307-00 [ICS,7,C*] |
| | IPCR | C07D0307-00 [I,C*]; C07D0307-88 [I,A]; C07D0307-93 |

| | | |
|---|---|---|
| | | [I,A]; C07D0493-00 [I,C*]; C07D0493-18 [I,A]; C08F0220-00 [I,C*]; C08F0220-18 [I,A]; C08F0220-28 [I,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A] |
| | ECLA | C07D307/88; C07D307/93; C07D493/18+307C+307C+307B+3; C08F220/18; C08F220/28; G03F007/039C1S |
| TW 583182 | IPCI | C07D0307-93 [ICM,7]; C07D0307-88 [ICS,7]; C07D0307-77 [ICS,7]; C07D0307-00 [ICS,7,C*] |
| | IPCR | C07D0307-00 [I,C*]; C07D0307-88 [I,A]; C07D0307-93 [I,A]; C07D0493-00 [I,C*]; C07D0493-18 [I,A]; C08F0220-00 [I,C*]; C08F0220-18 [I,A]; C08F0220-28 [I,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A] |
| US 2004063882 | IPCI | C07D0407-00 [I,A] |
| | IPCR | C07D0307-00 [I,C*]; C07D0307-88 [I,A]; C07D0307-93 [I,A]; C07D0493-00 [I,C*]; C07D0493-18 [I,A]; C08F0220-00 [I,C*]; C08F0220-18 [I,A]; C08F0220-28 [I,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A] |
| | NCL | 526/266.000; 549/305.000 |
| | ECLA | C07D307/88; C07D307/93; C07D493/18+307C+307C+307B+3; C08F220/18; C08F220/28; G03F007/039C1S |
| US 2005113538 | IPCI | C08F0024-00 [I,A]; C08F0034-02 [I,A]; C08F0034-00 [I,C*] |
| | IPCR | C07D0307-00 [I,C*]; C07D0307-88 [I,A]; C07D0307-93 [I,A]; C07D0493-00 [I,C*]; C07D0493-18 [I,A]; C08F0220-00 [I,C*]; C08F0220-18 [I,A]; C08F0220-28 [I,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A] |
| | NCL | 526/266.000; 526/319.000 |
| | ECLA | C07D307/88; C07D307/93; C07D493/18+307C+307C+307B+3; C08F220/18; C08F220/28; G03F007/039C1S |

OS MARPAT 137:39324

GI



I

AB (Meth)acrylate esters are represented by the general formula I (R1-4 = H, Me, Et; one of X1 and X2 is (meth)acryloyloxy and the other is H; A1 and A2 are H or form O, CH2, CH2CH2). These esters can be prepared by preparing a product of addition of a 1,3-diene with maleic anhydride by Diels-Alder reaction, reducing this product into a lactone, hydrating this lactone into an alc., and esterifying this alc. with (meth)acrylic acid. The (co)polymers produced by polymerizing monomer compns. containing the (meth)acrylate esters are excellent in transparency, dry-etching resistance, and solubility in organic solvents, and useful as resins for chemical

amplifiable resist compns.
ST methacrylate acrylate ester copolymer electron beam resist photoresist; chem amplification resist
IT Electron beam resists
Photoresists
((meth)acrylate-based chemical amplification-type resist)
IT Diels-Alder reaction
(preparation of (meth)acrylate-based chemical amplification-type resist)
IT 66003-78-9, Triphenylsulfoniumtriflate
RL: CAT (Catalyst use); USES (Uses)
(photoacid; (meth)acrylate-based chemical amplification-type resist)
IT 80-62-6, Methyl methacrylate 85-43-8 108-31-6, Maleic anhydride, reactions 760-93-0, Methacrylic anhydride 826-62-0, 5-Norbornene-2,3-dicarboxylic anhydride 920-46-7, Methacrylic acid chloride 6118-51-0, exo-3,6-Epoxy-1,2,3,6-tetrahydrophthalic anhydride 25134-21-8, Methyl-5-norbornene-2,3-dicarboxylic anhydride
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of (meth)acrylate-based chemical amplification-type resist)
IT 24327-08-0P, endo-Bicyclo[2.2.2]octo-5-ene-2,3-dicarboxylic anhydride 85718-44-1P, 4-Oxatricyclo[5.2.1.02,6]-8-decene-3-one 436852-32-3P 436852-33-4P 436852-34-5P 436852-35-6P 436852-36-7P 436852-37-8P 436852-38-9P 436852-40-3P 436852-41-4P 436852-42-5P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of (meth)acrylate-based chemical amplification-type resist)
IT 436852-43-6P 436852-44-7P 436852-45-8P 436852-46-9P 436852-47-0P 436852-48-1P 436852-49-2P 436852-50-5P 436852-51-6P 436852-52-7P 436852-54-9P 436852-57-2P 436852-59-4P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of (meth)acrylate-based chemical amplification-type resist)
IT 97-64-3, Ethyl lactate 84540-57-8, Propylene glycol monomethylether acetate
RL: TEM (Technical or engineered material use); USES (Uses)
(preparation of (meth)acrylate-based chemical amplification-type resist)
IT 68-12-2, N,N-Dimethylformamide, uses 108-65-6, 2-Acetoxy-1-methoxypropane 109-99-9, Tetrahydrofuran, uses 123-91-1, 1,4-Dioxane, uses
RL: NUU (Other use, unclassified); USES (Uses)
(solvent; preparation of (meth)acrylate-based chemical amplification-type resist)
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Mitsubishi Rayon Co Ltd; JP 20026502 A 2002
(2) Mori, K; Liebigs Ann Chem 1993, 6, P671 CA
(3) Numata, A; Yakugaku Zasshi 1968, V88(9), P1151 CA
(4) Squibb E R And Sons Inc; US 4143054 A 1980 CA
(5) Squibb E R And Sons Inc; US 4187236 A 1980 CA

L8 ANSWER 15 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 136:301775 CA
ED Entered STN: 02 May 2002
TI Positive-working photoresist compositions containing alkali-soluble resin having norbornene structure
IN Sato, Kenichiro
PA Fuji Photo Film Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 40 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G03F007-039
ICS C08F220-18; C08F222-40; C08F232-00; C08K005-00; C08L045-00; G03F007-004; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
FAN.CNT 2

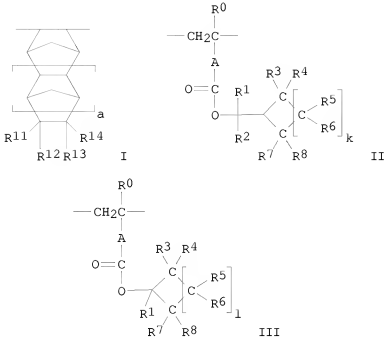
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 2002099087 | A | 20020405 | JP 2000-290654 | 20000925 |
| | US 2002064727 | A1 | 20020530 | US 2001-960343 | 20010924 |
| | US 6727039 | B2 | 20040427 | | |
| | KR 765245 | B1 | 20071009 | KR 2001-58973 | 20010924 |
| | TW 231890 | B | 20050501 | TW 2001-90123605 | 20010925 |
| PRAI | JP 2000-290654 | A | 20000925 | | |
| | JP 2000-296881 | A | 20000928 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2002099087 | ICM | G03F007-039 |
| | ICS | C08F220-18; C08F222-40; C08F232-00; C08K005-00; C08L045-00; G03F007-004; H01L021-027 |
| | IPCI | G03F0007-039 [ICM,7]; C08F0220-18 [ICS,7]; C08F0220-00 [ICS,7,C*]; C08F0222-40 [ICS,7]; C08F0222-00 [ICS,7,C*]; C08F0232-00 [ICS,7]; C08K0005-00 [ICS,7]; C08L0045-00 [ICS,7]; G03F0007-004 [ICS,7]; H01L0021-027 [ICS,7]; H01L0021-02 [ICS,7,C*] |
| | IPCR | G03F0007-039 [I,C*]; G03F0007-039 [I,A]; C08F0220-00 [I,C*]; C08F0220-18 [I,A]; C08F0222-00 [I,C*]; C08F0222-40 [I,A]; C08F0232-00 [I,C*]; C08F0232-00 [I,A]; C08K0005-00 [I,C*]; C08K0005-00 [I,A]; C08L0045-00 [I,C*]; C08L0045-00 [I,A]; G03F0007-004 [I,C*]; G03F0007-004 [I,A]; H01L0021-02 [I,C*]; H01L0021-027 [I,A] |
| US 2002064727 | IPCI | G03F0007-004 [ICM,7] |
| | IPCR | G03F0007-039 [I,C*]; G03F0007-039 [I,A] |
| | NCL | 430/270.100; 430/914.000; 430/921.000 |
| | ECLA | G03F007/039C1S |
| KR 765245 | IPCI | G03F0007-039 [I,A] |
| TW 231890 | IPCI | G03F0007-039 [ICS,7]; C08F0220-10 [ICS,7]; C08F0220-00 [ICS,7,C*]; C08F0222-06 [ICS,7]; C08F0222-00 [ICS,7,C*] |
| | IPCR | G03F0007-039 [I,C*]; G03F0007-039 [I,A] |

OS MARPAT 136:301775

GI



AB The compns., useful for semiconductor devices, contain (A) resins which contain a repeating unit I (R11-R14 = H, alkyl; a = 0, 1) and II (R0 = H, lower alkyl; A = direct bond, alkylene, cycloalkylene, O, S, CO, ester group; R1, R2 = lower alkyl; R3-R8 = H, lower alkyl, lower alkoxy, halo; CR3R4, CR5R6 may be CO; R3 and R5 may be bonded together to form alkylene; k = 2-5) or III (R0-R8, A = any group given for those in II; l = 2-5) and show increased solubility to an alkaline developer by action of acids and (B) photoacid generators. The photoresist compns. show good storage stability, adhesion, and low exposure margin.

ST pos photoresist norbornene cyclohexylmethyl acrylate copolymer

IT Positive photoresists
(pos.-working photoresist compns. containing alkali-soluble norbornene-acrylate polymers)

IT 66003-78-9 81416-37-7 116808-67-4 138529-81-4 138529-84-7 142096-70-6 144317-44-2 145612-66-4 153698-46-5 179419-32-0 241806-75-7 307531-76-6 312386-77-9 324771-13-3 338445-29-7 338445-31-1 341548-84-3 406722-76-7 406722-77-8
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; pos.-working photoresist compns. containing

alkali-soluble norbornene-acrylate polymers)
IT 398140-79-9P 406722-62-1P 406722-63-2P 406722-64-3P 406722-65-4P
406722-66-5P 406722-67-6P 406722-68-7P 406722-69-8P 406722-71-2P
406722-72-3P 406722-73-4P 406722-74-5P 406722-75-6P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(pos.-working photoresist compns. containing alkali-soluble
norbornene-
acrylate polymers)

L8 ANSWER 16 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 136:301658 CA
ED Entered STN: 02 May 2002
TI Tailoring transparency of imageable fluoropolymers at 157 nm by
incorporation of hexafluoroisopropyl alcohol to photoresist backbones
AU Bae, Young C.; Douki, Katsuji; Yu, Tianyue; Dai, Junyan; Schmaljohann,
Dirk; Koerner, Hilmar; Ober, Christopher K.; Conley, Will
CS Department of Materials Science & Engineering, Cornell University,
Ithaca,
NY, 14853, USA
SO Chemistry of Materials (2002), 14(3), 1306-1313
CODEN: CMATEX; ISSN: 0897-4756
PB American Chemical Society
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
AB Hexafluoroisopropyl alc.-functionalized acrylic and styrenic monomers,
such as 2-[4-(2-hydroxyhexafluoro
isopropyl)cyclohexane]hexafluoroisopropy
l acrylate (2), 2-[4-(2,2,2-trifluoro-1-methoxy-methoxy-1-
trifluoromethylethyl)cyclohexane]hexafluoroisopropyl acrylate
(3), and 2-[4-(2,2,2-trifluoro-1-ethoxymethoxy-1-
trifluoromethylethyl)]styrene (4), were synthesized, and their (co
)polymers were studied as photoresist platforms for 157 nm lithog. It
was
found that these (co)polymers are unusually transparent at 157
nm, and absorbances of poly(2) and poly(2-co-4) were determined to be
1.93 and 2.38 μm-1, resp. Results indicated that both
electron-withdrawing effects and bulkiness of CF3 groups play important
roles in tailoring the absorbance of chromophores. Lithog. studies were
carried out with poly(2)-based resists using 157 and 248 nm steppers, and
it was demonstrated that, after selective modification, it is possible to
use conventional resist backbones, such as acrylic or styrenic polymers,
in the design of single-layer resists for 157 nm lithog.
ST lithog photoresist acrylic styrene polymer hexafluoroisopropyl alc group;
photolithog vacuum UV resist polymer hexafluoroisopropyl alc group;
fluorocarbinol contg polymer chem amplified photoresist vacuum UV lithog
IT Photoresists
(chemical amplified; lithog. characterization of chemical amplified
157 nm
photoresists based on polymers containing hexafluoroisopropyl
alc.-functionalized acrylic and styrenic monomers)
IT Absorptivity
Thermal stability

Transparency
UV and visible spectra
(lithog. characterization of chemical amplified 157 nm photoresists based
on polymers containing hexafluoroisopropyl alc.-functionalized acrylic and
styrenic monomers)
IT Fluoropolymers, properties
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(lithog. characterization of chemical amplified 157 nm photoresists based
on polymers containing hexafluoroisopropyl alc.-functionalized acrylic and
styrenic monomers)
IT 1116-76-3, Trioctylamine 2052-49-5, Tetrabutylammonium hydroxide
RL: NUU (Other use, unclassified); USES (Uses)
(acid diffusion inhibitor; lithog. characterization of chemical amplified
157 nm photoresists based on polymers containing hexafluoroisopropyl alc.-functionalized acrylic and styrenic monomers)
IT 75-59-2, Tetramethylammonium hydroxide
RL: NUU (Other use, unclassified); USES (Uses)
(developer; lithog. characterization of chemical amplified 157 nm photoresists based on polymers containing hexafluoroisopropyl alc.-functionalized acrylic and styrenic monomers)
IT 406939-14-8P
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(lithog. characterization of chemical amplified 157 nm photoresists based
on polymers containing hexafluoroisopropyl alc.-functionalized acrylic and
styrenic monomers)
IT 368422-52-0P, 2-[4-(2-Hydroxyhexafluoro isopropyl)cyclohexane]hexafluorois
opropyl acrylate homopolymer 406939-11-5P 406939-12-6P
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(lithog. characterization of polymers containing hexafluoroisopropyl alc.-functionalized acrylic and styrenic monomers in chemical amplified
photoresist formulations)
IT 144317-44-2, Triphenylsulfonium perfluoro-1-butanesulfonate
RL: TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; lithog. characterization of chemical amplified 157 nm photoresists based on polymers containing hexafluoroisopropyl alc.-functionalized acrylic and styrenic monomers)
IT 84540-57-8, Propylene glycol methyl ether acetate
RL: NUU (Other use, unclassified); USES (Uses)
(resist solvent; lithog. characterization of chemical amplified 157 nm photoresists based on polymers containing hexafluoroisopropyl alc.-functionalized acrylic and styrenic monomers)
IT 406939-09-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(synthesis of hexafluoroisopropyl alc.-containing acrylic monomers for use
in chemical amplified photoresist for vacuum-UV lithog. lithog)
IT 367522-45-0P, 2-[4-(2-Hydroxyhexafluoro isopropyl)cyclohexane]hexafluorois
opropyl acrylate 367522-46-1P, 2-[4-(2,2,2-Trifluoro-1-methoxy-methoxy-1-trifluoromethylethyl)cyclohexane]hexafluoroisopropyl acrylate 367522-47-2P, 2-[4-(2,2,2-Trifluoro-1-ethoxymethoxy-1-trifluoromethylethyl)]styrene
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(synthesis of hexafluoroisopropyl alc.-containing polymers for use in chemical
amplified photoresist for vacuum-UV lithog. lithog)
RE.CNT 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(2) Bae, Y; Polym Prepr 2001, V42(2), P403 CA
(3) Bloomstein, T; J Vac Sci Technol, B 1997, V15, P2112 CA
(4) Bloomstein, T; J Vac Sci Technol, B 1998, V16, P3154 CA
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(6) Fedynyshyn, T; Proc SPIE-Int Soc Opt Eng 2001, V4345, P296 CA
(7) Feiring, A; WO 0067072 2000 CA
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(18) Patterson, K; Proc SPIE-Int Soc Opt Eng 2000, V3999, P365 CA
(19) Przybilla, K; Adv Mater 1992, V4, P239 CA
(20) Przybilla, K; Proc SPIE-Int Soc Opt Eng 1992, V1672, P500 CA
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(22) Ramsey, B; J Am Chem Soc 1966, V88, P3058 CA
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(24) Schmaljohann, D; J Photopolym Sci Technol 2000, V13, P451 CA
(25) Schmaljohann, D; Proc SPIE-Int Soc Opt Eng 2000, V3999, P330 CA
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(27) Snow, A; J Appl Polym Sci 1991, V43, P1659 CA
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(30) Wallraff, G; Chem Rev 1999, V99, P1801 CA

L8 ANSWER 17 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 136:270596 CA
ED Entered STN: 18 Apr 2002
TI Blends of hydroxystyrene polymers for use in chemically amplified positive
resist formulations
IN Chen, Kuang-Jung; DellaGuardia, Ronald Anthony; Ito, Hiroshi; Jordhamo, George Michael; Katnani, Ahmad Dauod

FOR 10559534 by Cynthia Hamilton

PA International Business Machines Corporation, USA
SO U.S., 12 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM G03F007-004
INCL 430270100
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38, 76
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 6365321 | B1 | 20020402 | US 1999-291389 | 19990413 |
| PRAI US 1999-291389 | | 19990413 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| US 6365321 | ICM | G03F007-004 |
| | INCL | 430270100 |
| | IPCI | G03F0007-004 [ICM,7] |
| | IPCR | G03F0007-004 [I,C*]; G03F0007-004 [I,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A] |
| | NCL | 430/270.100; 430/905.000; 430/910.000 |
| | ECLA | G03F007/004D; G03F007/039C1S |

AB A photoresist binder composition comprises a homogeneous blend of (A) a hydroxystyrene copolymer comprising a first monomer that is optionally substituted hydroxystyrene and a second monomer containing an acid labile group, preferably pendant to the polymer backbone, and (B) and a phenolic polymer, that is optionally partially or wholly protected, such as polyhydroxystyrene, poly(hydroxystyrene-co-styrene), poly(hydroxystyrene-co-styrene-co-t-Bu acrylate), novolac, and the like. Also provided is a lithog. resist composition comprising the homogeneous blend of the photoresist binder composition, and a radiation-sensitive acid generator which generates an acid upon exposure to radiation, and a process for using the resist composition to generate resist images on a substrate, such as in the manufacture of integrated circuits or the like.
ST chem amplified photoresist binder hydroxystyrene blend photolithog integrated circuit
IT Phenolic resins, uses
RL: POF (Polymer in formulation); USES (Uses)
(blends of hydroxystyrene polymers for use in chemical amplified pos. resist formulations)
IT Polymer blends
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(blends of hydroxystyrene polymers for use in chemical amplified pos. resist formulations)
IT Photolithography
(blends of hydroxystyrene polymers for use in chemical amplified pos.

resist formulations for)
IT Integrated circuits
(blends of hydroxystyrene polymers for use in chemical amplified pos. resist formulations in relation to)
IT Positive photoresists
(chemical amplified; blends of hydroxystyrene polymers for use in chemical amplified pos. resist formulations)
IT 24979-74-6, p-Hydroxystyrene-styrene copolymer
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(blend with hydrolyzed acetoxystyrene-tert-Bu acrylate copolymer; blends of hydroxystyrene polymers for use in chemical amplified pos. resist formulations in relation to)
IT 174476-25-6DP, p-Acetoxystyrene-tert-butyl acrylate copolymer, hydrolyzed
RL: POF (Polymer in formulation); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(blend with hydroxystyrene-styrene copolymer; blends of hydroxystyrene polymers for use in chemical amplified pos. resist formulations in relation to)
IT 174476-25-6P, p-Acetoxystyrene-tert-butyl acrylate copolymer
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(blends of hydroxystyrene polymers for use in chemical amplified pos. resist formulations in relation to)
IT 45187-15-3, Perfluorobutanesulfonate 194861-06-8, Di-(tert-butylphenyl)iodonium camphorsulfonate
RL: TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; blends of hydroxystyrene polymers for use in chemical amplified pos. resist formulations)
IT 97-64-3, Ethyl lactate 763-69-9, Ethyl 3-ethoxypropionate
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; blends of hydroxystyrene polymers for use in chemical amplified pos. resist formulations)
RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(2) Anon; EP 0813113 A1 1997 CA
(3) Barclay; US 5861231 A 1999 CA
(4) Breyta; US 5492793 A 1996 CA
(5) Breyta; US 5625020 A 1997 CA
(6) Collins; US 5547812 A 1996 CA
(7) Ito; Journal of Photopolymer Science and Technology 1994, V7(3), P433 CA
(8) Iwanaga; US 5962180 A 1999 CA
(9) Kawai; Jpn J Appl Phys 1992, V31(12B), P4316 CA
(10) Murata; US 5482816 A 1996 CA
(11) Takemura; US 5759739 A 1998 CA
(12) Wallraff; Journal of Photopolymer Science and Technology 1998, V11(4), P673 CA
(13) Yamachika; US 5556734 A 1996 CA
(14) Yamachika; US 5679495 A 1997 CA

L8 ANSWER 18 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 136:254474 CA
ED Entered STN: 11 Apr 2002
TI Free-radical synthesis of narrow polydispersed 2-hydroxyethyl methacrylate-based tetrapolymers for dilute aqueous base developable negative photoresists
AU Diakoumakos, Constantinos D.; Raptis, Ioannis; Tserepi, Angeliki; Argitis, Panagiotis
CS Institute of Microelectronics, NCSR Demokritos, Athens, 15343, Greece
SO Polymer (2001), Volume Date 2002, 43(4), 1103-1113
CODEN: POLMAG; ISSN: 0032-3861
PB Elsevier Science Ltd.
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 37, 38
AB Novel (meth)acrylate tetrapolymers based on 2-hydroxyethyl methacrylate (HEMA) were synthesized via free-radical polymerization in refluxing xylene under monomer-starved conditions for use in neg. photoresist formulations. 2,2'-Azobis(2-methylbutyronitrile) was used as initiator and 2-mercaptoethanol as chain transfer agent. Optimized resist formulations were obtained with a relatively narrow polydispersed (D=1.86) low mol. weight copolymer (Mn=1677) of 2-hydroxyethyl methacrylate (HEMA), isobornyl methacrylate (IBMA), cyclohexyl methacrylate (CHMA) and acrylic acid (AA), in a 40/30/23/7 weight ratio. A novel high-resolution single layer neg. tone photoresist suitable for 193 nm and e-beam lithog. that meets basic performance requirements (aqueous-base development, enhanced etch resistance, sub-0.2 μm resolution) was developed from the aforementioned (meth)acrylate tetrapolymer, the poly(2-hydroxyethyl methacrylate-co-cyclohexyl methacrylate-co-isobornyl methacrylate-co-acrylic acid) (PHECIMA) and a sulfonium salt photoacid generator. The key-components for the neg. image formation (photoacid induced crosslinking) are the hydroxyl groups of the HEMA moieties. The swelling-free neg. resist material was developed in diluted aqueous base [tetramethyl ammonium hydroxide, (TMAH) 0.26+10-2N] and presented enhanced etch resistance without the use of etch resistance promoters. 0.20-0.14 μM lines were obtained upon 193 nm and/or e-beam lithog.
ST methacrylate deriv tetrapolymer synthesis swelling free neg photoresist lithog; aq base developable neg photoresist methacrylate deriv tetrapolymer synthesis; free radical polymn methacrylate deriv tetrapolymer synthesis neg photoresist
IT Photolithography
(UV; free-radical synthesis of narrow polydispersed 2-hydroxyethyl methacrylate-based tetrapolymers for swelling-free dilute aqueous base developable neg. photoresists)
IT UV and visible spectra
(absorption; free-radical synthesis of narrow polydispersed 2-hydroxyethyl methacrylate-based tetrapolymers for swelling-free dilute

aqueous base developable neg. photoresists)
IT Electron beam lithography
Negative photoresists
(free-radical synthesis of narrow polydispersed 2-hydroxyethyl methacrylate-based tetrapolymers for swelling-free dilute aqueous base developable neg. photoresists)
IT Swelling, physical
(free-radical synthesis of narrow polydispersed 2-hydroxyethyl methacrylate-based tetrapolymers for swelling-free dilute aqueous base developable neg. photoresists in relation to)
IT Etching
(plasma; swelling-free dilute aqueous base developable neg. photoresists in
relation to)
IT Polymerization
(radical; free-radical synthesis of narrow polydispersed 2-hydroxyethyl
methacrylate-based tetrapolymers for swelling-free dilute aqueous base developable neg. photoresists)
IT 301532-99-0, AR 19
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(anti-reflective coating; free-radical synthesis of narrow polydispersed 2-hydroxyethyl methacrylate-based tetrapolymers for swelling-free dilute aqueous base developable neg. photoresists)
IT 60-24-2, 2-Mercaptoethanol
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(chain transfer agent; free-radical synthesis of narrow polydispersed 2-hydroxyethyl methacrylate-based tetrapolymers for swelling-free dilute
aqueous base developable neg. photoresists)
IT 75-59-2, Tetramethyl ammonium hydroxide
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(developer; free-radical synthesis of narrow polydispersed 2-hydroxyethyl methacrylate-based tetrapolymers for swelling-free dilute
aqueous base developable neg. photoresists)
IT 374938-51-9P, Acrylic acid-cyclohexyl methacrylate-2-hydroxyethyl methacrylate-isobornyl methacrylate copolymer
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(free-radical synthesis of narrow polydispersed 2-hydroxyethyl methacrylate-based tetrapolymers for swelling-free dilute aqueous base developable neg. photoresists)
IT 79-10-7, Acrylic acid, reactions 101-43-9, Cyclohexyl methacrylate 868-77-9, 2-Hydroxyethyl methacrylate 7534-94-3, Isobornyl methacrylate
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(free-radical synthesis of narrow polydispersed 2-hydroxyethyl methacrylate-based tetrapolymers for swelling-free dilute aqueous base developable neg. photoresists)
IT 25249-16-5, Poly(2-hydroxyethyl methacrylate)

RL: PRP (Properties)
(free-radical synthesis of narrow polydispersed 2-hydroxyethyl methacrylate-based tetrapolymers for swelling-free dilute aqueous base developable neg. photoresists in relation to)
IT 13472-08-7, 2,2'-Azobis(2-methylbutyronitrile)
RL: CAT (Catalyst use); USES (Uses)
(initiator; free-radical synthesis of narrow polydispersed 2-hydroxyethyl methacrylate-based tetrapolymers for swelling-free dilute aqueous base developable neg. photoresists)
IT 57840-38-7, Triphenylsulfonium hexafluoroantimonate
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(photoacid generator; free-radical synthesis of narrow polydispersed 2-hydroxyethyl methacrylate-based tetrapolymers for swelling-free dilute aqueous base developable neg. photoresists)
IT 104137-08-8, AZ 5214 180513-74-0, UV III
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(photoresist; free-radical synthesis of narrow polydispersed 2-hydroxyethyl methacrylate-based tetrapolymers for swelling-free dilute aqueous base developable neg. photoresists)
RE.CNT 54 THERE ARE 54 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L8 ANSWER 19 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 136:191685 CA
ED Entered STN: 14 Mar 2002
TI Positively working photoresist composition for far-ultraviolet exposure
IN Nakao, Hajime; Sato, Kenichiro
PA Fuji Photo Film Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 55 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G03F007-039
ICS C08F232-00; C08K005-00; C08K005-10; C08K005-17; C08K005-372; C08K005-541; C08L045-00; G03F007-004; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2002049154 | A | 20020215 | JP 2000-233146 | 20000801 |
| PRAI JP 2000-233146 | | 20000801 | | |

CLASS

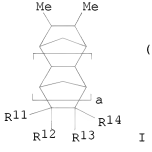
| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2002049154 | ICM | G03F007-039 |
| | ICS | C08F232-00; C08K005-00; C08K005-10; C08K005-17; C08K005-372; C08K005-541; C08L045-00; G03F007-004; H01L021-027 |
| | IPCI | G03F0007-039 [ICM,7]; C08F0232-00 [ICS,7]; C08K0005-00 [ICS,7]; C08K0005-10 [ICS,7]; C08K0005-17 [ICS,7]; |

C08K0005-372 [ICS,7]; C08K0005-541 [ICS,7]; C08L0045-00 [ICS,7]; G03F0007-004 [ICS,7]; H01L0021-027 [ICS,7]; H01L0021-02 [ICS,7,C*]

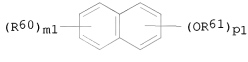
IPCR G03F0007-039 [I,C*]; G03F0007-039 [I,A]; C08F0232-00 [I,C*]; C08F0232-00 [I,A]; C08K0005-00 [I,C*]; C08K0005-00 [I,A]; C08K0005-10 [I,A]; C08K0005-17 [I,A]; C08K0005-372 [I,A]; C08K0005-54 [I,A]; C08K0005-541 [I,A]; C08L0045-00 [I,C*]; C08L0045-00 [I,A]; G03F0007-004 [I,C*]; G03F0007-004 [I,A]; H01L0021-02 [I,C*]; H01L0021-027 [I,A]

OS MARPAT 136:191685

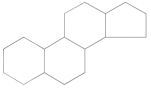
GI




I




II



III

AB The composition, useful for ultramicrolithog. process in fabrication of ultra-large-scale integrated circuits (ULSI), contains (A) polymers having alicyclic repeating unit I [R11-R14 = H, (substituted) alkyl; a = 0, 1] and [CH2CR(ACO2W)] unit [R1 = H, Me; A = none, alkylene, cycloalkylene, O, S, CO, and/or ester; W = CRaRbRc, CHRdORe; Ra-Rc, Re = (halo-, alkoxy-, alkoxycarbonyl, acyl-, or acyloxy-substituted) C1-20 linear or branched alkyl, C3-20 cycloalkyl; Ra and Rb may form an alicyclic ring; Rd = H, alkyl] to increase alkali developability by acids, (B) photoacid generators, and (C) R[X(CR51R52)qCO2R']n (II; X = O, S, NR53, none; R51-R53 = H, alkyl; R' = acid-degradable group as CO2R'; R = bridged hydrocarbon, saturated alicyclic compound, naphthalene-containing n-valent residue; n = 1-4; q = 0-10), naphthalene derivs. III (R60 = alkyl, halo; R61 = acid-degradable group as OR61; m = 0-4; p = 1-4), or a cholic acid derivative having structure IV substituted with ≥2 groups having ≥1 substituent containing carboxyl group protected with acid-unstable group. The compds. II-IV work as dissoln. inhibitors and the composition gives high-resolution contact hole and trench patterns in fabrication of

semiconductor devices.
ST pos photoresist far UV dissoln inhibitor; contact hole trench pattern photoresist pos
IT Polysiloxanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(KP 341, surfactant; pos.-working photoresist composition for far-UV exposure)
IT Positive photoresists
(UV; pos.-working photoresist composition for far-UV exposure)
IT 24556-20-5 156301-83-6 169228-97-1 184633-80-5 198548-99-1 202654-70-4 265119-61-7 332136-74-0 399041-03-3 399041-04-4 399041-05-5 399041-06-6
RL: TEM (Technical or engineered material use); USES (Uses)
(dissoln. inhibitor; pos.-working photoresist composition for far-UV exposure)
IT 251949-14-1P, tert-Butyl cholate-glutaryl dichloride copolymer 321994-64-3P
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(oligomeric, dissoln. inhibitor; pos.-working photoresist composition for far-UV exposure)
IT 14159-45-6 66003-78-9 135539-92-3 138529-81-4 144089-15-6 144317-44-2 153698-46-5 197447-16-8 197447-17-9 241806-75-7 258341-99-0 307531-76-6 307976-40-5 312386-77-9 391232-40-9
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; pos.-working photoresist composition for far-UV exposure)
IT 260448-02-0P, tert-Butyl acrylate-maleic anhydride-norbornene copolymer 369371-67-5P 383196-78-9P 383196-80-3P 383196-82-5P 383196-83-6P 383196-85-8P 383196-87-0P 383196-88-1P 383196-89-2P 383196-91-6P 383196-93-8P 383196-95-0P 391232-36-3P 391232-38-5P
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(pos.-working photoresist composition for far-UV exposure)
IT 484-47-9, 2,4,5-Triphenylimidazole 1122-58-3 6674-22-2, DBU
RL: TEM (Technical or engineered material use); USES (Uses)
(pos.-working photoresist composition for far-UV exposure)
IT 9016-45-9, Polyoxyethylene nonylphenyl ether 137462-24-9, Megafac F 176 216679-67-3, Megafac R 08
RL: TEM (Technical or engineered material use); USES (Uses)
(surfactant; pos.-working photoresist composition for far-UV exposure)

L8 ANSWER 20 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 136:110037 CA
ED Entered STN: 07 Feb 2002
TI New polymer for 157-nm single-layer resist based on fluorine-containing acryl copolymer
AU Ogata, Toshiyuki; Endo, Koutaro; Komano, Hiroshi; Nakayama, Toshimasa
CS Advanced Materials Development Division 1, Tokyo Ohka Kogyo Co., Ltd., Samukawa-cho, Koza-gun, Kawasaki-shi, 253-0114, Japan
SO Proceedings of SPIE-The International Society for Optical Engineering

(2001), 4345(Pt. 2, Advances in Resist Technology and Processing XVIII), 1048-1055
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Development is reported of acrylic polymer based on methacrylate and acrylate monomers containing various trifluoromethyl groups for the application to 157 nm chemical amplified pos.-tone resists. The authors developed a novel monomer, trifluoromethyl-iso-adamantyl methacrylate (TFIAdMA) and a new co-polymer being a combination of fluorinated methacrylate derivs. and substituted p-hydroxystyrene. The absorption coefficient of poly(p-tert-butoxystyrene-hexafluoro-tert-Bu methacrylate-co-methacrylic acid) was <3 μm-1 at 157 nm. Patterning was done with 157 nm contact exposure system of VUVES-4500 by LTJ. One of the exptl. resists, based on a particular polymer ratio and photoacid generator, has clearly achieved 180 nm line and space pattern resolution At 140 nm resist film thickness, the sensitivity was 31 mJ/cm2 when using 0.26 N tetramethylammonium hydroxide surfactant developer.
ST vacuum UV chem amplification photoresist fluorine substituted acrylic copolymer
IT Fluoropolymers, properties
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(acrylic; lithog. characterization of fluorine-containing acrylic polymers for 157-nm single-layer chemical amplification photoresist)
IT Photoresists
(chemical amplification; polymer for 157-nm single-layer resist based on fluorine-containing acrylic copolymer)
IT Absorptivity
(lithog. characterization of fluorine-containing acrylic polymers for 157-nm single-layer chemical amplification photoresist)
IT 75-59-2, Tetramethylammonium hydroxide
RL: NUU (Other use, unclassified); USES (Uses)
(developer; etch rate of fluorine-containing acrylic polymers for 157-nm single-layer chemical amplification photoresist)
IT 388613-62-5 388613-63-6
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(lithog. characterization of fluorine-containing acrylic polymers for 157-nm single-layer chemical amplification photoresist)
IT 75-46-7, Trifluoromethane 75-73-0, Carbon tetrafluoride
RL: NUU (Other use, unclassified); USES (Uses)
(plasma; etch rate of fluorine-containing acrylic polymers for 157-nm single-layer chemical amplification photoresist)
IT 28825-23-2 354818-15-8 388613-61-4
RL: PRP (Properties)
(polymers for 157-nm single-layer chemical amplification photoresist based

on fluorine-containing acrylic copolymer)
IT 388613-59-0P
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(polymers photoresist application in for 157 nm lithog. containing copolymers of novel monomer of trifluoromethyl-iso-adamantyl methacrylate)
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L8 ANSWER 21 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 136:12719 CA
ED Entered STN: 27 Dec 2001
TI Negative (meth)acrylate resist materials based on novel crosslinking chemistry
AU Diakoumakos, C. D.; Raptis, I.; Tserepi, A.; Argitis, P.
CS NCSR "Demokritos", Institute of Microelectronics, Athens, Aghia Paraskevi, 15310, Greece
SO Microelectronic Engineering (2001), 57-58, 539-545
CODEN: MIENEF; ISSN: 0167-9317
PB Elsevier Science B.V.
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Novel neg.-tone resist materials suitable for 193 nm and e-beam lithog., based on newly-synthesized (meth)acrylate copolymers that contain (2-hydroxyethyl methacrylate) as the necessary component for imaging and aqueous base development, are presented. A representative resist of this class is formulated using poly(2-hydroxyethyl methacrylate-co-cyclohexyl methacrylate-co-isobornyl methacrylate-co-acrylic acid) (PHECIMA) and a sulfonium salt photo acid generator. The neg. image formation is based on acid induced crosslinking of the hydroxyl groups of the 2-hydroxyethyl methacrylate (HEMA) moieties.
The neg. resist presented no swelling phenomena in the aqueous base developer and enhanced etch resistance. Dense 0.18 μm and isolated 0.13 μm lines have been obtained upon 193 nm and e-beam lithog. establishing PHECIMA's resist formulations as promising candidates for high-resolution lithog. upon a further material and process optimization.
ST electron beam lithog deep UV resist hydroxyethyl methacrylate copolymer; acrylate copolymer neg resist electron beam lithog; photolithog UV

hydroxyethyl methacrylate copolymer neg resist; photoresist neg deep UV hydroxyethyl methacrylate copolymer
IT Photolithography
(UV; neg. methacrylate resist materials based on novel crosslinking chemical)
IT Electron beam lithography
Negative photoresists
(neg. methacrylate resist materials based on novel crosslinking chemical)
IT 75-59-2, Tetramethyl ammonium hydroxide
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(developer; neg. methacrylate resist materials based on novel crosslinking chemical)
IT 374938-51-9P, Acrylic acid-cyclohexyl methacrylate-2-hydroxyethyl methacrylate-isobornyl methacrylate copolymer
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN
(Synthetic preparation); PREP (Preparation); PROC (Process)
(neg. methacrylate resist materials based on novel crosslinking chemical)
IT 57840-38-7, Triphenylsulfonium hexafluoroantimonate
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(photoacid generator; neg. methacrylate resist materials based on novel crosslinking chemical)
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(8) Raptis, I; Microelectron Eng 2000, V53, P589

L8 ANSWER 22 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 135:325178 CA
ED Entered STN: 15 Nov 2001
TI Effect of comonomer structure on dissolution characteristics: ArF negative
resist system using androsterone derivative with δ-hydroxy acid
AU Yokoyama, Yoshiyuki; Hattori, Takashi; Kimura, Kaori; Tanaka, Toshihiko; Shiraishi, Hiroshi
CS Central Research Laboratory, Hitachi Ltd., Tokyo, 185-8601, Japan
SO Journal of Photopolymer Science and Technology (2001), 14(3), 393-400
CODEN: JSTEEW; ISSN: 0914-9244
PB Technical Association of Photopolymers, Japan
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB A neg. resist system utilizing acid-catalyzed intramol. esterification of δ-hydroxy acid has been developed for ArF phase-shifting lithog. The system is made up of an acrylate polymer with pendant structure of androsterone derivative with δ-hydroxy acid and a

photoacid generator. The authors investigated the effect of the comonomer and found that it changes the affinity of the resist polymer to the aqueous base developer. The change of the polarity of the comonomer was found to drastically affect the dissoln. properties and the resolution capability. Optimization of the δ-hydroxy acid content and the developer concentration prevented pattern deformation such as "winding lines" and scum between the lines. The improved resist formulation combined with an ArF excimer-laser stepper with a phase-shifting mask produced a clearly resolved 100-nm line-and-space patterns.

ST monomer structure effect dissoln photoresist androsterone deriv hydroxy acid

IT Dissolution rate
Molecular structure-property relationship
Negative photoresists
(co-monomer structure effect on dissoln. characteristics of neg. photoresist system using acrylate polymer with pendant of androsterone derivative with δ-hydroxy acid group)

IT 367947-20-4DP, hydrolyzed 367947-21-5DP, hydrolyzed
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(co-monomer structure effect on dissoln. characteristics of neg. photoresist system using acrylate polymer with pendant of androsterone derivative with δ-hydroxy acid group)

IT 75-59-2, Tetramethyl ammonium hydroxide
RL: NUU (Other use, unclassified); USES (Uses)
(developer; co-monomer structure effect on dissoln. characteristics of neg. photoresist system using acrylate polymer with pendant of androsterone derivative with δ-hydroxy acid group)

IT 367947-19-1DP, hydrolyzed
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(dissoln. characteristics of neg. photoresist system using acrylate polymer with pendant of androsterone derivative with δ-hydroxy acid group)

IT 367947-17-9P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(oxidation reaction in synthesis of acrylate polymer with pendant structure of androsterone derivative with δ-hydroxy acid group)

IT 66003-78-9, Triphenylsulfonium triflate
RL: NUU (Other use, unclassified); USES (Uses)
(photoacid generator; co-monomer structure effect on dissoln. characteristics of neg. photoresist system using acrylate polymer with pendant of androsterone derivative with δ-hydroxy acid group)

IT 367947-18-0P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(synthesis of acrylate polymer with pendant structure of androsterone derivative with δ-hydroxy acid group)

RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD

FOR 10559534 by Cynthia Hamilton

RE
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L8 ANSWER 23 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 135:325173 CA
ED Entered STN: 15 Nov 2001
TI Rejuvenation of 248 nm resist backbones for 157 nm lithography
AU Bae, Young C.; Douki, Katsuji; Yu, Tianyue; Dai, Junyan; Schmaljohann, Dirk; Kang, Seok Ho; Kim, Keon Hyeong; Koerner, Hilmar; Conley, Will; Miller, Daniel; Balasubramanian, Raghu; Holl, Susan; Ober, Christopher K.
CS Department of Materials Science & Engineering, Cornell University, Ithaca, NY, 14853, USA
SO Journal of Photopolymer Science and Technology (2001), 14(4), 613-620
CODEN: JSTEEW; ISSN: 0914-9244
PB Technical Association of Photopolymers, Japan
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Fluorocarbinol-based acrylic and styrenic monomers, such as 2-[4-(2-hydroxyhexafluoroisopropyl)cyclohexane]hexafluoroisopropyl acrylate (1) 2-[4-(2,2,2-trifluoro-1-methoxymethoxy-1-

trifluoromethylethyl)cyclohexane]h exafluoroisopropyl acrylate (2), and 2-[4-(2,2,2-trifluoro-1-ethoxymethoxy-1-trifluoromethylethyl)]styrene (3), were synthesized and their (co)polymers were studied as photoresist platforms for 157 nm lithog. It was found that these (co)polymers are unusually transparent at 157 nm, and absorbances of poly(1) and poly(1-co-3) were determined to be 1.93 and 2.38 μm-1, resp. It was also found that further improvement in transparency is possible by adding transparency enhancers to the resist platform. Lithog. studies were carried out with poly(1)- and poly(3)-based resists using 157 and 248 nm steppers, and it was proven that, after selective modification, it is possible to use conventional resist backbones, such as acrylic or styrenic, in the design of single-layer resists for 157 nm lithog.

ST vacuum UV lithog photoresist fluorocarbinol based polymer; fluorocarbinol based acrylic styrenic monomer copolymer photolithog photoresist

IT Photoresists
Thermal stability
UV and visible spectra
(chemical amplified photoresist for 157 nm lithog. based on homo- and copolymers of fluorocarbinol-based acrylic and styrenic monomers)

IT 367522-48-3P
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(chemical amplified photoresist for 157 nm lithog. based on homo- and copolymers of fluorocarbinol-based acrylic and styrenic monomers)

IT 367522-49-4 367522-50-7 367522-52-9
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(chemical amplified photoresist for 157 nm lithog. based on homo- and copolymers of fluorocarbinol-based acrylic and styrenic monomers)

IT 75-59-2, Tetramethylammonium hydroxide
RL: NUU (Other use, unclassified); USES (Uses)
(developer; chemical amplified photoresist for 157 nm lithog. based on homo- and copolymers of fluorocarbinol-based acrylic and styrenic monomers)

IT 144317-44-2
RL: TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; chemical amplified photoresist for 157 nm lithog. based on homo- and copolymers of fluorocarbinol-based acrylic and styrenic monomers)

IT 367522-45-0P, 2-[4-(2-Hydroxyhexafluoroisopropyl)cyclohexane]hexafluoroisopropyl acrylate 367522-46-1P, 2-[4-(2,2,2-Trifluoro-1-methoxymethoxy-1-trifluoromethylethyl)cyclohexane]h exafluoroisopropyl acrylate 367522-47-2P, 2-[4-(2,2,2-Trifluoro-1-ethoxymethoxy-1-trifluoromethylethyl)]styrene
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(synthesis of fluorocarbinol-based acrylic and styrenic monomers for preparation of photoresist copolymers for 157 nm lithog.)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Bae, Y; Polym Prepr 2000, V41(2), P1586 CA

(2) Ito, H; ACS Symp Ser 1998, V706, P449
(3) Ito, H; Polym Mater Sci Eng 1997, V77, P449 CA
(4) Kunz, R; J Vac Sci Technol B 1999, V17, P3267 CA
(5) Przybilla, K; Adv Mater 1992, V4, P239 CA
(6) Przybilla, K; Proc SPIE-Int Soc Opt Eng 1992, V1672, P500 CA
(7) Ramsey, B; J Am Chem Soc 1966, V88, P3058 CA
(8) Schmaljohann, D; J Photopolym Sci Technol 2000, V13, P451 CA
(9) Schmaljohann, D; Proc SPIE-Int Soc Opt Eng 2000, V3999, P330 CA
(10) Seebach, D; Angew Chem Int Ed Engl 1990, V29, P1320
(11) Snow, A; J Appl Polym Sci 1991, V43, P1659 CA

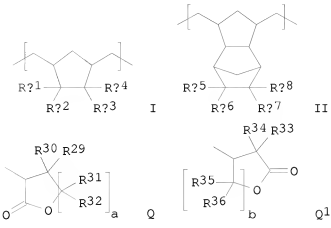
L8 ANSWER 24 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 135:218725 CA
ED Entered STN: 27 Sep 2001
TI Positive-working far-UV photoresist composition containing sulfonium salts
as photoacid generators
IN Sato, Kenichiro; Mizutani, Kazuyoshi
PA Fuji Photo Film Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 35 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G03F007-039
ICS C08G061-08; C08K005-42; C08L065-00; G03F007-004; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2001235869 | A | 20010831 | JP 2000-47971 | 20000224 |
| PRAI JP 2000-47971 | | 20000224 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2001235869 | ICM | G03F007-039 |
| | ICS | C08G061-08; C08K005-42; C08L065-00; G03F007-004; H01L021-027 |
| | IPCI | G03F0007-039 [ICM,7]; C08G0061-08 [ICS,7]; C08G0061-00 [ICS,7,C*]; C08K0005-42 [ICS,7]; C08K0005-00 [ICS,7,C*]; C08L0065-00 [ICS,7]; G03F0007-004 [ICS,7]; H01L0021-027 [ICS,7]; H01L0021-02 [ICS,7,C*] |
| | IPCR | G03F0007-039 [I,C*]; G03F0007-039 [I,A]; C08G0061-00 [I,C*]; C08G0061-08 [I,A]; C08K0005-00 [I,C*]; C08K0005-42 [I,A]; C08L0065-00 [I,C*]; C08L0065-00 [I,A]; G03F0007-004 [I,C*]; G03F0007-004 [I,A]; H01L0021-02 [I,C*]; H01L0021-027 [I,A] |

OS MARPAT 135:218725
GI




AB The compns., which are storage stable and show high sensitivity and resolution in formation of contact hole pattern in semiconductor device fabrication, contain (A) S+R1R2R3 Z- [R1-R3 = (un)substituted alkyl, (un)substituted aryl; 2 of R1-R3 may bonded together to via direct bond or substituent; Z- = counter anion] which generate acids by irradiation with actinic ray or radiation and (B) a resin which is decomposed with acids to become alkali-soluble and contains ≥1 repeating unit selected from I [Rc1-Rc4 = H, (un)substituted alkyl, (un)substituted cyclic hydrocarbyl, halo, cyano, CO2H, COYARc9, COYACO2(CH2)2SiR'R''R''', CO2Rc11, CO2(CH2)2SiR'R''R'''; R', R'', R''' = alkyl, trialkylsilyl, trialkylsilyloxy; Y = O, S, NH, NHSO2, NHSO2NH; Rc9 = CO2H, CO2Rc10 (Rc10 = any group given for Rc11, Q, Q1), cyano, OH, (un)substituted alkoxy, CONHRc11, CONHSO2Rc11, Q, Q1; Rc11 = (un)substituted alkyl, (un)substituted cycloalkyl; A = direct bond, (un)substituted alkylene, ether, thioether, CO, ester, amido, etc.; R29-R36 = H, (un)substituted alkyl; a, b = 1, 2; ≥1 od Rc1-Rc4 = ≥1 of Rc1-Rc4 = COYACO2(CH2)2SiR'R''R''' or CO2(CH2)2SiR'R''R'''] and II (Rc5-Rc8 = any group given for Rc1-Rc4).

ST far UV pos photoresist sulfonium photoacid generator; semiconductor device far UV pos photoresist; silylethoxycarbonyl contg resin far UV pos photoresist

IT Positive photoresists
(UV; pos.-working far-UV photoresist composition containing sulfonium salts as photoacid generators and silylethoxycarbonyl-containing resins)

IT Semiconductor device fabrication
(pos.-working far-UV photoresist composition containing sulfonium salts as photoacid generators and silylethoxycarbonyl-containing resins)

IT Sulfonium compounds
RL: CAT (Catalyst use); USES (Uses)
(pos.-working far-UV photoresist composition containing sulfonium salts as photoacid generators and silylethoxycarbonyl-containing resins)

IT 66003-78-9 144089-15-6 153698-46-5 206861-54-3 241806-75-7
258341-99-0 260061-58-3 279218-75-6 301525-08-6 350251-56-8
350251-57-9 357444-19-0 357444-20-3
RL: CAT (Catalyst use); USES (Uses)
(pos.-working far-UV photoresist composition containing sulfonium salts as
photoacid generators and silylethoxycarbonyl-containing resins)
IT 46276-02-2P 327023-46-1P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(pos.-working far-UV photoresist composition containing sulfonium salts as
photoacid generators and silylethoxycarbonyl-containing resins)
IT 351195-80-7DP, ring-opening polymerization
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(pos.-working far-UV photoresist composition containing sulfonium salts as
photoacid generators and silylethoxycarbonyl-containing resins)
IT 542-92-7, Cyclopentadiene, reactions 3121-61-7, 2-Methoxyethyl acrylate 131494-24-1, 2-(Trimethylsilyl)ethyl acrylate
RL: RCT (Reactant); RACT (Reactant or reagent)
(pos.-working far-UV photoresist composition containing sulfonium salts as
photoacid generators and silylethoxycarbonyl-containing resins)
IT 351195-81-8D, ring-opening polymerization 351195-82-9D, ring-opening polymerization
351195-84-1D, ring-opening polymerization 357444-12-3D, ring-opening polymerization
357444-15-6 357444-17-8D, ring-opening polymerization
RL: TEM (Technical or engineered material use); USES (Uses)
(pos.-working far-UV photoresist composition containing sulfonium salts as
photoacid generators and silylethoxycarbonyl-containing resins)

L8 ANSWER 25 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 135:129573 CA
ED Entered STN: 16 Aug 2001
TI Deep UV positive photoresist compositions containing norbornene- or dicyclopentadiene-based polymers
IN Mizutani, Kazuyoshi
PA Fuji Photo Film Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 30 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G03F007-039
ICS G03F007-004; G03F007-095; G03F007-26; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
FAN.CNT 1

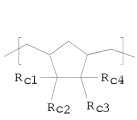
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 2001201855 | A | 20010727 | JP 2000-8239 | 20000117 |

PRAI JP 2000-8239 20000117

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2001201855 | ICM | G03F007-039 |
| | ICS | G03F007-004; G03F007-095; G03F007-26; H01L021-027 |
| | IPCI | G03F0007-039 [ICM,7]; G03F0007-004 [ICS,7]; G03F0007-095 [ICS,7]; G03F0007-26 [ICS,7]; H01L0021-027 [ICS,7]; H01L0021-02 [ICS,7,C*] |
| | IPCR | H01L0021-02 [I,C*]; H01L0021-027 [I,A]; G03F0007-004 [I,C*]; G03F0007-004 [I,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A]; G03F0007-095 [I,C*]; G03F0007-095 [I,A]; G03F0007-26 [I,C*]; G03F0007-26 [I,A] |

GI

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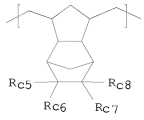


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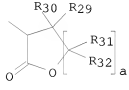
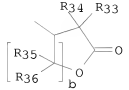



III




IV

AB The photoresist compns. contain (A) active light- or radiation-sensitive acid generators and (B) resins whose solubilities into alkaline solns. are increased by acidolysis and which involve repeating units norbornene derivs. I and/or dicyclopentadiene derivs. II [Rc1-Rc8 = H, (substituted) alkyl, (substituted) cyclohydrocarbyl, halo, cyano, CO2H, C(O)YARc9, C(O)YACO2(CH2)2SiR1R2R3, CO2Rc11, CO2(CH2)2SiR1R2R3; ≥1 of Rc1-Rc4 = C(O)YACO2(CH2)2SiR1R2R3 or CO2(CH2)2SiR1R2R3; ≥1 of Rc5-Rc8 = C(O)YACO2(CH2)2SiR1R2R3 or CO2(CH2)2SiR1R2R3; R1-R3 = alkyl, trialkylsilyl, trialkylsilyloxy; Y = O, S, NH, NHSO2, NHSO2NH; Rc9 = CO2H, CO2Rc10 (Rc10 = same as Rc11 or lactones III or IV), CN, OH, (substituted) alkoxyl, CONHRc11, CONHSO2Rc11, or lactones III or IV; Rc11 = (substituted) alkyl, (substituted) cycloalkyl; A = single bond; alkylene, substituted alkylene, O, S, CO, CO2, amide, sulfonamide, urethane, urea; R29-R36 = H, alkyl; a, b = 1, 2]. The compns. may further

contain (C) organic bases, (D) silicone-based, F-containing, or nonionic surfactants and (E) organic solvents. In the bilayer resist process, pattern shift on pattern transfer to underlayers while O plasma etching is minimized. Its pattern formation on i-ray resist coated on a Si wafer by exposing to ArF excimer laser was exemplified.

ST deep UV pos photoresist norbornene polymer; cyclopentadiene trimethylsilylethyl acrylate reaction polymn photoresist; methoxyethyl acrylate cyclopentadiene reaction polymn photoresist; dicyclopentadiene polymer deep UV pos photoresist; argon fluoride excimer laser photoresist

IT Polysiloxanes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(KP 341, surfactants; deep UV pos. photoresist compns. containing norbornene- or dicyclopentadiene-based polymers)

IT Positive photoresists
(UV; deep UV pos. photoresist compns. containing norbornene- or dicyclopentadiene-based polymers)

IT Cycloalkenes
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymers; deep UV pos. photoresist compns. containing norbornene- or dicyclopentadiene-based polymers)

IT 351195-80-7DP, hydrogenated
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(deep UV pos. photoresist compns. containing norbornene- or dicyclopentadiene-based polymers)

IT 351195-81-8D, hydrogenated 351195-82-9D, hydrogenated 351195-84-1D, hydrogenated
RL: TEM (Technical or engineered material use); USES (Uses)
(deep UV pos. photoresist compns. containing norbornene- or dicyclopentadiene-based polymers)

IT 57840-38-7 66003-76-7 66003-78-9 144089-15-6 153698-46-5 335385-79-0 335385-81-4 335385-82-5
RL: CAT (Catalyst use); USES (Uses)
(photoacid generator; deep UV pos. photoresist compns. containing norbornene- or dicyclopentadiene-based polymers)

IT 484-47-9, 2,4,5-Triphenylimidazole 1122-58-3, 4-Dimethylaminopyridine 6674-22-2, 1,8-Diazabicyclo[5.4.0]undec-7-ene
RL: MOA (Modifier or additive use); USES (Uses)
(polymer dissoln. promoters; deep UV pos. photoresist compns. containing norbornene- or dicyclopentadiene-based polymers)

IT 121-46-0, Norbornadiene 3121-61-7, 2-Methoxyethyl acrylate 131494-24-1, 2-(Trimethylsilyl)ethyl acrylate
RL: RCT (Reactant); RACT (Reactant or reagent)
(starting materials for monomer preparation; deep UV pos. photoresist compns. containing norbornene- or dicyclopentadiene-based polymers)

IT 9016-45-9, Poly(oxyethylene) nonylphenyl ether 137462-24-9, Megafac F 176 216679-67-3, Megafac R 08
RL: MOA (Modifier or additive use); USES (Uses)
(surfactants; deep UV pos. photoresist compns. containing norbornene- or

dicyclopentadiene-based polymers)

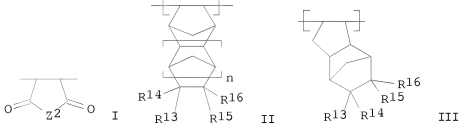
L8 ANSWER 26 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 135:114439 CA
ED Entered STN: 09 Aug 2001
TI Positive-working far-UV sensitive photoresist composition containing specific acid-sensitive resin and specific additives
IN Adegawa, Yutaka; Sato, Kenichiro; Kodama, Kunihiko; Aogo, Toshiaki
PA Fuji Photo Film Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 93 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G03F007-039
ICS C08F222-00; C08F232-00; G03F007-004; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2001194786 | A | 20010719 | JP 1999-317407 | 19991108 |
| PRAI JP 1999-197911 | A | 19990712 | | |
| JP 1999-302917 | A | 19991025 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2001194786 | ICM | G03F007-039 |
| | ICS | C08F222-00; C08F232-00; G03F007-004; H01L021-027 |
| | IPCI | G03F0007-039 [ICM,7]; C08F0222-00 [ICS,7]; C08F0232-00 [ICS,7]; G03F0007-004 [ICS,7]; H01L0021-027 [ICS,7] |
| | IPCR | H01L0021-02 [I,C*]; H01L0021-027 [I,A]; C08F0222-00 [I,C*]; C08F0222-00 [I,A]; C08F0232-00 [I,C*]; C08F0232-00 [I,A]; G03F0007-004 [I,C*]; G03F0007-004 [I,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A] |

GI




AB The title composition contains a photoacid generator, copolymer having repeating unit chosen from [-CH(CO-X-A-R1)-CH(CO-X-A-R2)-] ( R1-2 = H, cyano, OH, etc.; X = O, S, -NH-, etc.; A = single bond, 2-valent connecting group) and I ( Z2 = -O-, amino), and a repeating

unit chosen from II and III ( R13-16 = H, halo, cyano, one of R13-16 must be adamantyl acrylate). The composition, which contains the aforementioned acid-sensitive resin and the additives, generates little faulty development of the resist layer without forming scum.
ST pos working photoresist compn light sensitive resin additive
IT Cycloalkenes
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymers; pos.-working photoresist composition containing specific acid-sensitive resin and specific additives)
IT Photoresists
(pos.-working photoresist composition containing specific acid-sensitive resin
and specific additives)
IT 331747-08-1P 331747-10-5P 331747-12-7P 331747-14-9P 331747-16-1P 331747-18-3P 331747-20-7P 331747-21-8P 350498-51-0P 350498-52-1P 350498-55-4P
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(acid-sensitive resin in pos.-working photoresist composition)
IT 66003-78-9, Triphenylsulfonium triflate 288303-62-8 288303-65-1 288303-68-4 288303-71-9 288303-73-1 288303-75-3 288303-77-5 301525-08-6
RL: TEM (Technical or engineered material use); USES (Uses)
(photoacid generator in pos.-working photoresist composition)
IT 50-00-0, Formaldehyde, reactions 74-88-4, Methyliodide, reactions 93-11-8, 2-Naphthalenesulfonyl chloride 107-21-1, Ethylene glycol, reactions 108-67-8, Mesitylene, reactions 126-81-8, Dimedone 832-53-1, Pentafluorobenzenesulfonyl chloride 945-51-7, Diphenyl sulfoxide 1694-31-1, tert-Butyl acetoacetate 2033-24-1 21286-54-4, (+)-Camphorsulfonyl chloride 29420-49-3, Potassium nonafluorobutanesulfonate 31017-40-0, Phenylcyclohexene
RL: RCT (Reactant); RACT (Reactant or reagent)
(pos.-working photoresist composition containing specific acid-sensitive resin
and specific additives)
IT 331747-03-6P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(pos.-working photoresist composition containing specific acid-sensitive resin
and specific additives)

L8 ANSWER 27 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 135:68557 CA
ED Entered STN: 19 Jul 2001
TI Photolithography and its chemically-amplified photoresists containing specific sulfonyldiazomethane compounds
IN Seki, Akihiro; Takemura, Katsuya; Osawa, Yoichi; Watanabe, Atsushi; Nagura, Shigehiro
PA Shin-Etsu Chemical Industry Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 49 pp.
CODEN: JKXXAF
DT Patent

LA Japanese
IC ICM G03F007-004
ICS C07C381-14; C08K005-09; C08K005-13; C08K005-16; C08K005-41; C08K005-43; C08L025-02; C08L025-18; C08L033-02; C08L033-04; C08L035-00; G03F007-039; G03F007-26
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 25, 37
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 2001174984 | A | 20010629 | JP 2000-294695 | 20000927 |
| | JP 3750725 | B2 | 20060301 | | |
| | US 6395446 | B1 | 20020528 | US 2000-680481 | 20001005 |
| PRAI | JP 1999-285450 | A | 19991006 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2001174984 | ICM | G03F007-004 |
| | ICS | C07C381-14; C08K005-09; C08K005-13; C08K005-16; C08K005-41; C08K005-43; C08L025-02; C08L025-18; C08L033-02; C08L033-04; C08L035-00; G03F007-039; G03F007-26 |
| | IPCI | G03F0007-004 [I,A]; C07C0381-14 [I,A]; C07C0381-00 [I,C*]; C08K0005-09 [I,A]; C08K0005-13 [I,A]; C08K0005-16 [I,A]; C08K0005-41 [I,A]; C08K0005-43 [I,A]; C08K0005-00 [I,C*]; C08L0025-02 [I,A]; C08L0025-18 [I,A]; C08L0025-00 [I,C*]; C08L0033-02 [I,A]; C08L0033-04 [I,A]; C08L0033-00 [I,C*]; C08L0035-00 [I,A]; G03F0007-039 [I,A] |
| | IPCR | G03F0007-004 [I,C*]; G03F0007-004 [I,A]; C07C0381-00 [I,C*]; C07C0381-14 [I,A]; C08K0005-00 [I,C*]; C08K0005-09 [I,A]; C08K0005-13 [I,A]; C08K0005-16 [I,A]; C08K0005-41 [I,A]; C08K0005-43 [I,A]; C08L0025-00 [I,C*]; C08L0025-02 [I,A]; C08L0025-18 [I,A]; C08L0033-00 [I,C*]; C08L0033-02 [I,A]; C08L0033-04 [I,A]; C08L0035-00 [I,C*]; C08L0035-00 [I,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A]; G03F0007-26 [I,C*]; G03F0007-26 [I,A] |
| US 6395446 | IPCI | G03F0007-004 [ICM,7]; G03F0007-30 [ICS,7] |
| | IPCR | G03F0007-004 [I,C*]; G03F0007-004 [I,A]; G03F0007-038 [I,C*]; G03F0007-038 [I,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A]; G03F0007-16 [I,C*]; G03F0007-16 [I,A] |
| | NCL | 430/170.000; 430/270.100; 430/326.000; 430/330.000; 430/905.000 |
| | ECLA | G03F007/004D; G03F007/038C; G03F007/039C; G03F007/16Z |

OS MARPAT 135:68557
AB The photoresists contain (i) [C6H5-p-q(R1CO2)qR2pSO2]nC:N2(GR3)m (R1, R3 = C1-10 alkyl, C6-14 aryl; R2 = C1-6 alkyl; G = SO2, CO; p = 0-4 integer; q = 1-5 integer; 1 ≤ p + q ≤ 5; n = 1, 2; m = 0, 1; m + n = 2) or (ii) R1CO2-p-C6H4SO2C:N2SO2-p-C6H4OCOR1 (R1 = the same definition as above) as photoacid generators. The photoresists may comprise (α-methyl-)p-hydroxystyrene-(meth) acrylate

ester copolymers with Mw 3,000-100,000 containing ≤80 (≠0)-mol% acid-labile substituents. Markush structures for preferable acid-labile substituents are given. Photolithog. employing the photoresists and ≤300-nm high-energy beam or electron beam is also claimed. The photoresists show excellent post-development profiles.

ST sulfonylazomethane photoacid generator chem amplified photoresist; hydroxystyrene methacrylate copolymer chem amplified photoresist; development profile improved far UV photoresist

IT Positive photoresists
(chemical amplified; chemical-amplified pos. photoresists containing alkali-solubility-improved sp. sulfonylazomethanes for far-UV photolithog.)

IT Photolithography
(chemical-amplified pos. photoresists containing alkali-solubility-improved sp. sulfonylazomethanes for far-UV photolithog.)

IT 2628-17-3D, p-Hydroxystyrene, ethoxyethyl ether, 1,2-propanediol divinyl ether copolymer 2628-17-3D, p-Hydroxystyrene, ethoxyethyl ether,tert-butoxycabonic ester, 1,2-propanediol divinyl ether copolymer 59269-51-1D, Polyhydroxystyrene, ethoxyethyl ether 155214-68-9D, ethoxyethyl ether 189257-17-8, Poly(hydroxystyrene) acetate 326925-68-2 326925-73-9 345580-95-2 346428-50-0 346428-52-2
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(chemical-amplified pos. photoresists containing alkali-solubility-improved sp. sulfonylazomethanes for far-UV photolithog.)

IT 104884-57-3P 327614-10-8P 334700-88-8P 334700-90-2P 334700-93-5P 334700-97-9P 346428-58-8P 346428-65-7P
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(in preparation of sulfonyldiazomethane derivs. as photoacid generators of chemical-amplified photoresists)

IT 334700-94-6P 334700-95-7P 334700-99-1P 334701-00-7P
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(in preparation of sulfonyldiazomethane derivs. as photoacid generators of chemical-amplified photoresists)

IT 70-11-1, α-Bromoacetophenone 75-09-2, Dichloromethane, reactions 75-36-5, Acetyl chloride 79-03-8, Propionyl chloride 98-88-4, Benzoyl chloride 637-89-8, 4-Hydroxythiophenol 941-55-9, p-Toluenesulfonylazide 3282-30-2, Pivaloyl chloride 68483-71-6, Chloromethylcyclohexyl sulfide
RL: RCT (Reactant); RACT (Reactant or reagent)
(in preparation of sulfonyldiazomethane derivs. as photoacid generators of chemical-amplified photoresists)

IT 39153-56-5, Bis(2,4-dimethylphenylsulfonyl)diazomethane 161453-44-7 161453-47-0 334701-01-8
RL: CAT (Catalyst use); USES (Uses)
(photoacid generators; chemical-amplified pos. photoresists containing alkali-solubility-improved sp. sulfonylazomethanes for far-UV photolithog.)

IT 334700-91-3P 334700-96-8P

RL: CAT (Catalyst use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(photoacid generators; chemical-amplified pos. photoresists containing alkali-solubility-improved sp. sulfonylazomethanes for far-UV photolithog.)

L8 ANSWER 28 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 134:346380 CA
ED Entered STN: 31 May 2001
TI Preparation and characterization of photoreactive copolymers containing curable pendants for positive photoresist
AU Liu, Jui-Hsiang; Lin, Seng-Hei; Shih, Jen-Chieh
CS Department of Chemical Engineering, National Cheng Kung University, Tainan, 70101, Taiwan
SO Journal of Applied Polymer Science (2001), 80(3), 328-333
CODEN: JAPNAB; ISSN: 0021-8995
PB John Wiley & Sons, Inc.
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 36
AB Tert-Bu methacrylate (TBMA) was polymerized with various monomers like Me methacrylate (MMA), Bu acrylate (NBA), acrylic acid (AA), and 2-hydroxyethyl methacrylate (HEMA). From film phys. properties, poly(TBMA-co-HEMA) and poly(TBMA-co-AA-co-NBA), were selected as resin binders. To introduce double bonds into the polymer side chain, the polymers were further functionalized with acryloyl chloride and glycidyl methacrylate. Polymers synthesized were identified using FTIR and NMR. The thermal decomposition temperature of functionalized poly(TBMA-co-HEMA) showed obvious difference before and after crosslinking. Adding a small amount of EGDMA as the crosslinking agent increased the degree of crosslinking and improved the phys. properties. Functionalized poly(TBMA-co-HEMA) was used as a binder resin and combined with a photoacid generator for pos. photoresists. From exposure characteristics, the optimal lithog. condition was achieved when exposed for 90 s, PEB at 100° for 2.5 min, and developed in 10% Na2CO3 developer for 30 s. After completing the lithog. process, the residual pattern of pos. photoresist was further treated at 140° for 30 min to cure the pendant unsatd. groups. The resolution of the pos. photoresist was analyzed by an optical microscope and SEM technique.
ST photoreactive polymer curable pendant pos photoresist
IT Crosslinking
Crosslinking agents
(effect of, on thermal properties of photoreactive copolymers containing curable pendants for deep-UV pos.-tone photoresist)
IT IR spectra
NMR (nuclear magnetic resonance)
Thermal decomposition

UV and visible spectra
(of photoreactive copolymers containing curable pendants for deep-UV pos.-tone photoresist)
IT Positive photoresists
Thermal properties
(thermal properties of photoreactive copolymers containing curable pendants
for deep-UV pos.-tone photoresist)
IT 97-90-5, Ethylene glycol dimethacrylate
RL: RCT (Reactant); RACT (Reactant or reagent)
(effect of, on thermal properties of photoreactive copolymers containing
curable pendants for deep-UV pos.-tone photoresist)
IT 88410-78-0P 129698-93-7P, tert-Butyl methacrylate-2-hydroxyethyl methacrylate copolymer 338445-54-8P 338445-58-2P, tert-Butyl methacrylate-2-hydroxyethyl methacrylate copolymer acrylate
RL: DEV (Device component use); PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation); USES (Uses)
(preparation and characterization of photoreactive copolymers containing curable
pendants for deep-UV pos.-tone photoresist)
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Ahne, H; EP 0023626 1980 CA
(2) Allen, R; J Electrochem Soc 1980, V127, P1379
(3) Dinaburg, M; Photosensitive Diazo Compounds 1964
(4) Ershov, V; Quinonediazide 1981, P261
(5) Grishina, A; J Photochem Photobiol A Chem 1998, V114, P159 CA
(6) Hiraoka, H; J Electrochem Soc 1981, V128, P2645 CA
(7) Kosbar, L; ACS Symp Series 1993, V527, P245 CA
(8) Liu, J; J Appl Polym Sci 1998, V70, P2401 CA
(9) Liu, J; Polym Adv Technol 2000, V11, P228 CA
(10) Nader, A; J D Polym Eng Sci 1992, V32, P1613 CA
(11) Rubner, R; Polymers for Microelectronics--PME'89 1989, P789

L8 ANSWER 29 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 134:139209 CA
ED Entered STN: 22 Feb 2001
TI Positive-working ultraviolet ray-sensitive resin composition and resist pattern formation using same
IN Imai, Kenji; Hasegawa, Takeya
PA Kansai Paint Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 18 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G03F007-039
ICS G03F007-004
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 2001022067 | A | 20010126 | JP 1999-190434 | 19990705 |

PRAI JP 1999-190434 19990705

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2001022067 | ICM | G03F007-039 |
| | ICS | G03F007-004 |
| | IPCI | G03F0007-039 [ICM,7]; G03F0007-004 [ICS,7] |
| | IPCR | G03F0007-039 [I,C*]; G03F0007-039 [I,A]; G03F0007-004 [I,C*]; G03F0007-004 [I,A] |

AB The title resin composition contains (a) a (co)polymer of a p-hydroxy-α-methylstyrene compound and optional other copolymerizable unsatd. monomers, (b) a CO2H-containing resin, (c) an ether bond-containing olefinic unsatd. compd, and (d) a photoacid generator. The title process comprises the steps of applying the composition on a substrate to form a UV-sensitive coating, exposing the coating to a UV ray laser beam directly or a UV ray through a mask film, and developing the coating. The process may comprise the steps of: (i) coating the composition on a support to obtain a pos.-working UV ray-sensitive dry film having a UV ray-sensitive layer made of the composition; (ii) laminating the dry film on a substrate so that the layer is contacted with the substrate; (iii) peeling the support off, if necessary; (iv) exposing the layer to a UV ray laser beam directly or a UV ray through a mask film; and (v) developing the layer to form a resist pattern. In the latter process, when the support is not peeled off in step (iii), the layer may be developed after peeling the support off to form a pattern. The composition useful as a resist provides high resolution resist patterns.

ST UV resist hydroxymethyl styrene copolymer; carboxy resin pos photoresist; ether olefin photoresist

IT Photoresists
(UV, pos.; photoresist composition containing hydroxymethylstyrene copolymer, carboxy-containing resin, olefin with ether bond, and photoacid generator)

IT 85342-62-7
RL: TEM (Technical or engineered material use); USES (Uses)
(acid generator; photoresist composition containing hydroxymethylstyrene copolymer, carboxy-containing resin, olefin with ether bond, and photoacid generator)

IT 80-05-7DP, Bisphenol A, reaction products with chloroethyl vinyl ether 110-75-8DP, 2-Chloroethyl vinyl ether, reaction products with bisphenol A 764-48-7DP, 2-Hydroxyethyl vinyl ether, reaction products with isocyanate compound 25067-83-8P, Acrylic acid-butyl acrylate-2-hydroxyethyl acrylate-styrene copolymer 28805-80-3DP, Tolylene diisocyanate trimethylolpropane adduct (3:1), reaction products wit hydroxyethyl vinyl ether 51032-74-7P, Poly(p-hydroxy-α-methylstyrene) 62385-58-4P

321336-83-8P
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(photoresist composition containing hydroxymethylstyrene copolymer, carboxy-containing resin, olefin with ether bond, and photoacid generator)
IT 216573-41-0P
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(preparation and hydrolysis of)
IT 216573-39-6P
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(preparation and polymerization of)
IT 4286-23-1, p-Hydroxy-α-methylstyrene
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with Et vinyl ether)
IT 109-92-2, Ethyl vinyl ether
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with hydroxymethylstyrene)

L8 ANSWER 30 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 134:123579 CA
ED Entered STN: 15 Feb 2001
TI Positive-working visible ray-sensitive resin composition and resist pattern formation using same
IN Imai, Kenji; Kogure, Hideo
PA Kansai Paint Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 18 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G03F007-039
ICS G03F007-004; H05K003-06
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2001022068 | A | 20010126 | JP 1999-190435 | 19990705 |
| PRAI JP 1999-190435 | | 19990705 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2001022068 | ICM | G03F007-039 |
| | ICS | G03F007-004; H05K003-06 |
| | IPCI | G03F0007-039 [ICM,7]; G03F0007-004 [ICS,7]; H05K0003-06 [ICS,7] |
| | IPCR | H05K0003-06 [I,C*]; H05K0003-06 [I,A]; G03F0007-004 [I,C*]; G03F0007-004 [I,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A] |

AB The title resin composition contains (a) a (co)polymer of a

p-hydroxy-α-methylstyrene compound and optional other copolymerizable unsatd. monomers, (b) a CO2H-containing resin, (c) an ether bond-containing olefinic unsatd. compd, (d) a photoacid generator, and (e) a photosensitizer. The title process comprises the steps of applying the composition on a substrate to form a visible ray-sensitive coating, exposing the coating to a visible ray laser beam directly or a visible ray through a mask film, and developing the coating to form a resist pattern. The process may comprise the steps of: (i) coating the composition on a support to obtain a pos.-working visible ray-sensitive dry film having a visible ray-sensitive layer made of the composition; (ii) laminating the dry film on a substrate so that the layer is contacted with the substrate; (iii) peeling the support off, if necessary; (iv) exposing the layer to a visible ray laser beam directly or a visible ray through a mask film; and (v) developing the layer to form a resist pattern. In the latter process, when the support is not peeled off in step (iii), the layer may be developed after peeling the support off to form a pattern. The composition useful as a resist provides high resolution resist patterns.

ST visible ray resist hydroxymethylstyrene copolymer; ether olefin photoresist; carboxy resin photoresist; photoacid generator sensitizer photoresist

IT Resists
(pos.-working; photoresist composition containing hydroxymethylstyrene copolymer, carboxy-containing resin, olefin with ether bond, and photoacid generator)

IT 85342-62-7
RL: TEM (Technical or engineered material use); USES (Uses)
(acid generator; photoresist composition containing hydroxymethylstyrene copolymer, carboxy-containing resin, olefin with ether bond, and photoacid generator)

IT 80-05-7DP, Bisphenol A, reaction products with chloroethyl vinyl ether 110-75-8DP, 2-Chloroethyl vinyl ether, reaction products with bisphenol A 764-48-7DP, 2-Hydroxyethyl vinyl ether, reaction products with isocyanate compound 25067-83-8P, Acrylic acid-butyl acrylate-2-hydroxyethyl acrylate-styrene copolymer 28805-80-3DP, Tolylene diisocyanate trimethylolpropane adduct (3:1), reaction products wit hydroxyethyl vinyl ether 51032-74-7P, Poly(p-hydroxy-α-methylstyrene) 62385-58-4P 321336-83-8P
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(photoresist composition containing hydroxymethylstyrene copolymer, carboxy-containing resin, olefin with ether bond, and photoacid generator)

IT 216573-41-0P
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(preparation and hydrolysis of)

IT 216573-39-6P

RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(preparation and polymerization of)
IT 4286-23-1, p-Hydroxy-α-methylstyrene
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with Et vinyl ether)
IT 109-92-2, Ethyl vinyl ether
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with hydroxymethylstyrene)
IT 63226-13-1
RL: TEM (Technical or engineered material use); USES (Uses)
(sensitizer; photoresist composition containing hydroxymethylstyrene copolymer,
carboxy-containing resin, olefin with ether bond, and photoacid generator)

L8 ANSWER 31 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 133:105930 CA
ED Entered STN: 11 Aug 2000
TI Preparations and compositions of lithographic resists containing photosensitive polymers with cyclic ether backbone
IN Choi, Sang Joon; Chung, Dong Hang; Lee, Si Hyung
PA Samsung Electronics Co., Ltd., S. Korea
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F220-18
ICS C08F236-20; C08K005-36; C08L033-06; G03F007-039; H01L021-027
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 74, 76
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 2000191732 | A | 20000711 | JP 1999-364811 | 19991222 |
| | JP 3660842 | B2 | 20050615 | | |
| | KR 2000042004 | A | 20000715 | KR 1998-58045 | 19981224 |
| | TW 476022 | B | 20020211 | TW 1999-88107907 | 19990515 |
| | US 6287747 | B1 | 20010911 | US 1999-465926 | 19991217 |
| PRAI | KR 1998-58045 | A | 19981224 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2000191732 | ICM | C08F220-18 |
| | ICS | C08F236-20; C08K005-36; C08L033-06; G03F007-039; H01L021-027 |
| | IPCI | C08F0220-18 [ICM,7]; C08F0220-00 [ICM,7,C*]; C08F0236-20 [ICS,7]; C08F0236-00 [ICS,7,C*]; C08K0005-36 [ICS,7]; C08K0005-00 [ICS,7,C*]; C08L0033-06 [ICS,7]; C08L0033-00 [ICS,7,C*]; G03F0007-039 [ICS,7]; H01L0021-027 [ICS,7]; H01L0021-02 [ICS,7,C*] |
| | IPCR | H01L0021-02 [I,C*]; H01L0021-027 [I,A]; C08F0220-00 [I,C*]; C08F0220-18 [I,A]; C08F0222-00 [I,C*]; |

| | | |
|---|---|---|
| | | C08F0222-20 [I,A]; C08F0236-00 [I,C*]; C08F0236-20 [I,A]; C08K0005-00 [I,C*]; C08K0005-36 [I,A]; C08L0033-00 [I,C*]; C08L0033-06 [I,A]; G03F0007-004 [N,C*]; G03F0007-004 [N,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A] |
| | ECLA | C08F222/20; G03F007/039 |
| KR 2000042004 | IPCI | G03F0007-031 [ICM,7] |
| | IPCR | H01L0021-02 [I,C*]; H01L0021-027 [I,A]; C08F0220-00 [I,C*]; C08F0220-18 [I,A]; C08F0222-00 [I,C*]; C08F0222-20 [I,A]; C08F0236-00 [I,C*]; C08F0236-20 [I,A]; C08K0005-00 [I,C*]; C08K0005-36 [I,A]; C08L0033-00 [I,C*]; C08L0033-06 [I,A]; G03F0007-004 [N,C*]; G03F0007-004 [N,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A] |
| TW 476022 | IPCI | G03F0007-039 [ICM,7] |
| | IPCR | H01L0021-02 [I,C*]; H01L0021-027 [I,A]; C08F0220-00 [I,C*]; C08F0220-18 [I,A]; C08F0222-00 [I,C*]; C08F0222-20 [I,A]; C08F0236-00 [I,C*]; C08F0236-20 [I,A]; C08K0005-00 [I,C*]; C08K0005-36 [I,A]; C08L0033-00 [I,C*]; C08L0033-06 [I,A]; G03F0007-004 [N,C*]; G03F0007-004 [N,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A] |
| | ECLA | C08F222/20; G03F007/039 |
| US 6287747 | IPCI | G03F0007-039 [ICM,7]; C08F0024-00 [ICS,7]; C08F0136-20 [ICS,7]; C08F0136-00 [ICS,7,C*]; C08F0232-08 [ICS,7]; C08F0232-00 [ICS,7,C*] |
| | IPCR | H01L0021-02 [I,C*]; H01L0021-027 [I,A]; C08F0220-00 [I,C*]; C08F0220-18 [I,A]; C08F0222-00 [I,C*]; C08F0222-20 [I,A]; C08F0236-00 [I,C*]; C08F0236-20 [I,A]; C08K0005-00 [I,C*]; C08K0005-36 [I,A]; C08L0033-00 [I,C*]; C08L0033-06 [I,A]; G03F0007-004 [N,C*]; G03F0007-004 [N,A]; G03F0007-039 [I,C*]; G03F0007-039 [I,A] |
| | NCL | 430/270.100; 526/266.000; 526/282.000; 526/309.000 |
| | ECLA | C08F222/20; G03F007/039 |

AB The chemical amplifiable photoresists suitable for micro-patterning by dry etching with ArF excimer laser beams in the semiconductor device fabrication, comprise a (meth)acrylic acid ester-based copolymer having cyclic ether units of CH2Z (Z = tetrahydropyran-3,5-diyl group bearing carboxylic acid esters on the 3- and 5-position, resp., provided that at least 1 of the esters is C7-20 alicyclic hydrocarbyl type) in the backbone and photoacid generator (PAG). Thus, heating diadamantyl 2,2'-(oxydimethylene)diacrylate 18.2 with diethoxyethyl 2,2'-(oxydimethylene)diacrylate 10.0 and methacrylic acid 2.6 g in THF in the presence of AIBN at reflux for .apprx.24 h gave a copolymer having cyclic ether units, weight-average mol. weight of 15,400 and polydispersity of 2.4. Dissolving the copolymer 1.0, triphenylsulfonium triflate (PAG) 0.02 and triisobutylamine 0.002 in propylene glycol monomethyl ether acetate 7 g, and filtering gave a photoresist which was coated on a silicon wafer to 0.45 μm thickness, pre-baked at 110° for 90 s, exposed with ArF excimer laser, post-exposure baked at 120° for 90 s and developed with a 2.38% tetramethylammonium hydroxide solution to give line-and-space

pattern of 0.30 μm under an exposure dose of .apprx.17 mJ/cm2.
ST lithog resist photosensitive polymer cyclic ether unit; semiconductor device manuf dry etching resist chem amplification; photoresist dry etching ArF excimer laser photocurable methacrylate copolymer; adamantyl methacrylate ether dimer copolymer photoresist
IT Excimer lasers
(ArF; prepns. and compns. of lithog. resists containing photosensitive polymers with cyclic ether backbone)
IT Ethers, uses
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(cyclic, polymers; prepns. and compns. of lithog. resists containing photosensitive polymers with cyclic ether backbone)
IT Sulfonium compounds
RL: CAT (Catalyst use); USES (Uses)
(photoacid generator; prepns. and compns. of lithog. resists containing photosensitive polymers with cyclic ether backbone)
IT Etching
Photoresists
Resists
Semiconductor device fabrication
(prepns. and compns. of lithog. resists containing photosensitive polymers
with cyclic ether backbone)
IT Acids, uses
RL: CAT (Catalyst use); USES (Uses)
(strong; prepns. and compns. of lithog. resists containing photosensitive
polymers with cyclic ether backbone)
IT Amines, uses
RL: CAT (Catalyst use); USES (Uses)
(tertiary, crosslinking co-catalyst; prepns. and compns. of lithog. resists containing photosensitive polymers with cyclic ether backbone)
IT 102-71-6, uses 111-42-2, uses 121-44-8, uses 1116-40-1, Triisobutylamine 25549-16-0, Triisooctylamine
RL: CAT (Catalyst use); USES (Uses)
(crosslinking co-catalyst; prepns. and compns. of lithog. resists containing photosensitive polymers with cyclic ether backbone)
IT 34684-40-7, N-Hydroxysuccinimide triflate 66003-76-7, Diphenyliodonium triflate 66003-78-9, Triphenylsulfonium triflate 144317-44-2, Triphenylsulfonium nonaflate 157959-61-0 162845-55-8, Triphenylsulfonium antimonate 168706-59-0 259229-69-1 259229-70-4D, salts
RL: CAT (Catalyst use); USES (Uses)
(photoacid generator; prepns. and compns. of lithog. resists containing photosensitive polymers with cyclic ether backbone)
IT 142-68-7DP, Tetrahydropyran, derivs., polymers
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(prepns. and compns. of lithog. resists containing photosensitive polymers
with cyclic ether backbone)

IT 254109-23-4P, Diadamantyl 2,2'-(oxydimethylene)diacrylate-di-tert-butyl 2,2'-(oxydimethylene)diacrylate copolymer 282118-22-3P 282118-23-4P 282118-24-5P 282118-25-6P 282118-26-7P 282118-27-8P 282118-28-9P
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(prepns. and compns. of lithog. resists containing photosensitive polymers with cyclic ether backbone)
IT 1663-39-4 5888-33-5, Isobornyl acrylate 30525-89-4, Paraformaldehyde 52351-91-4, 1-Ethoxyethyl acrylate 121601-93-2, 1-Adamantyl acrylate
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactant; prepns. and compns. of lithog. resists containing photosensitive polymers with cyclic ether backbone)

L8 ANSWER 32 OF 32 CA COPYRIGHT 2008 ACS on STN
AN 130:160483 CA
ED Entered STN: 13 Mar 1999
TI Dissolution characteristics of chemically amplified 193 nm resists
AU Itani, Toshiro; Yoshino, Hiroshi; Hashimoto, Shuichi; Yamana, Mitsuharu; Miyasaka, Mami; Tanabe, Hiroyoshi
CS NEC Corporation, Sagamihara, Kanagawa, 229-1198, Japan
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (1998), 16(6), 3726-3729
CODEN: JVTBD9; ISSN: 0734-211X
PB American Institute of Physics
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB The dissoln. kinetics of two types of chemical amplified pos. 193 nm resists were investigated; a terpolymer resist consisting of poly(tricyclodecylacrylate-co-tetrahydrodpyranyl-methacrylate-co-methacrylic acid) and triphenylsulfonium triflate as a photoacid generator, and a copolymer resist consisting of poly(carboxytetracyclododecylmethacrylate-co-tetrahydro-pyranyloxy-carbonyl-tetracyclododecylmethacrylate) and triphenylsulfonium triflate as a photoacid generator. The dissoln. rate contrast was higher and the slope of dissoln. rate curve was steeper for the terpolymer resist than those for the copolymer resist. However, the Arrhenius plots of the dissoln. rates were straight lines for both resists irresp. of the exposure doses. This indicates that only one mechanism dets. the dissoln. of both resists, and it is believed that the dominant rate-determining step in both resists is the tetramethylammoniumhydroxide penetration into the resist films. The resolution capability of the terpolymer resist was very high, 0.14 μm lines and spaces pattern. The resolution capability of the copolymer resist was moderate, 0.16 μm lines and spaces in spite of its lower dissoln. contrast and smaller slope value. In addition, the dry-etch resistance of both resists was close to that of a conventional polyhydroxystyrene base KrF resist. These results

indicate that both the terpolymer and the copolymer resists are candidates
for practical use.
ST chem amplified pos photoresist dissoln characteristic
IT Photoresists
(chemical amplified, pos., deep-UV; dissoln. characteristics of)
IT 66003-78-9, Triphenylsulfonium triflate 170969-47-8, (Tricyclodecyl) acrylate-tetrahydrodpyranyl methacrylate-methacrylic acid copolymer 195458-42-5
RL: TEM (Technical or engineered material use); USES (Uses)
(dissoln. characteristics of chemical amplified, pos., deep-UV photoresists containing)
RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Allen, R; J Photopolym Sci Technol 1995, V8, P623 CA
(2) Allen, R; Proc SPIE 1995, V2438, P474 CA
(3) Houlihan, F; Proc SPIE 1997, V3049, P84 CA
(4) Itani, T; J Photopolym Sci Technol 1997, V10, P409 CA
(5) Itani, T; J Vac Sci Technol B 1997, V15, P2541 CA
(6) Itani, T; Jpn J Appl Phys Part 1 1994, V33, P7005 CA
(7) Iwasa, S; J Photopolym Sci Technol 1996, V9, P447 CA
(8) Maeda, K; Proc SPIE 1996, V2724, P377 CA
(9) Maeda, K; Proc SPIE 1997, V3049, P55 CA
(10) Nakano, K; Proc SPIE 1995, V2438, P433 CA
(11) Nakano, K; Proc SPIE 1995, V2438, P433 CA
(12) Shida, N; J Photopolym Sci Technol 1996, V9, P457 CA
(13) Takechi, S; J Photopolym Sci Technol 1996, V9, P475 CA
(14) Wallow, T; Proc SPIE 1996, V2724, P355

=> s carbon dioxide and acrylate and photoacid
1307200 CARBON
507921 DIOXIDE
241516 CARBON DIOXIDE
(CARBON(W)DIOXIDE)
194728 ACRYLATE
4104 PHOTOACID
L9 1 CARBON DIOXIDE AND ACRYLATE AND PHOTOACID

=> d all

L9 ANSWER 1 OF 1 CA COPYRIGHT 2008 ACS on STN
AN 140:10624 CA
ED Entered STN: 25 Dec 2003
TI Method for forming chemically amplified resist patterns with excellent cross-sectional shapes
IN Endo, Masataka; Sasago, Masaru
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L021-027
ICS G03F007-039; G03F007-26; G03F007-38
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other

Reprographic Processes)

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 2003338452 | A | 20031128 | JP 2002-147330 | 20020522 |
| | CN 1461040 | A | 20031210 | CN 2003-131009 | 20030514 |
| | US 2003224589 | A1 | 20031204 | US 2003-438859 | 20030516 |
| | US 6902999 | B2 | 20050607 | | |
| PRAI | JP 2002-147330 | A | 20020522 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---|---|---|
| JP 2003338452 | ICM | H01L021-027 |
| | ICS | G03F007-039; G03F007-26; G03F007-38 |
| | IPCI | H01L0021-027 [ICM,7]; H01L0021-02 [ICM,7,C*]; G03F0007-039 [ICS,7]; G03F0007-26 [ICS,7]; G03F0007-38 [ICS,7] |
| | IPCR | G03F0007-039 [I,C*]; G03F0007-039 [I,A]; G03F0007-004 [N,C*]; G03F0007-004 [N,A]; G03F0007-16 [I,C*]; G03F0007-16 [I,A]; G03F0007-26 [I,C*]; G03F0007-26 [I,A]; G03F0007-38 [I,C*]; G03F0007-38 [I,A]; H01L0021-02 [I,C*]; H01L0021-027 [I,A]; H01L0021-3105 [I,A]; H01L0021-311 [I,A] |
| CN 1461040 | IPCI | H01L0021-027 [ICM,7]; H01L0021-02 [ICM,7,C*]; G03F0007-00 [ICS,7] |
| | IPCR | G03F0007-039 [I,C*]; G03F0007-039 [I,A]; G03F0007-004 [N,C*]; G03F0007-004 [N,A]; G03F0007-16 [I,C*]; G03F0007-16 [I,A]; G03F0007-26 [I,C*]; G03F0007-26 [I,A]; G03F0007-38 [I,C*]; G03F0007-38 [I,A]; H01L0021-02 [I,C*]; H01L0021-027 [I,A]; H01L0021-3105 [I,A]; H01L0021-311 [I,A] |
| | ECLA | H01L021/027B; H01L021/3105B2B; H01L021/3105P; H01L021/311D |
| US 2003224589 | IPCI | H01L0021-22 [ICM,7]; H01L0021-02 [ICM,7,C*] |
| | IPCR | G03F0007-039 [I,C*]; G03F0007-039 [I,A]; G03F0007-004 [N,C*]; G03F0007-004 [N,A]; G03F0007-16 [I,C*]; G03F0007-16 [I,A]; G03F0007-26 [I,C*]; G03F0007-26 [I,A]; G03F0007-38 [I,C*]; G03F0007-38 [I,A]; H01L0021-02 [I,C*]; H01L0021-027 [I,A]; H01L0021-3105 [I,A]; H01L0021-311 [I,A] |
| | NCL | 438/552.000; 257/E21.024; 257/E21.242; 257/E21.245; 257/E21.257 |
| | ECLA | H01L021/027B; H01L021/3105B2B; H01L021/3105P; H01L021/311D; G03F007/16 |

AB The method contains treating porous films or organic material-containing films in supercrit. fluids (CO2, preferably), forming chemical amplified resist layers on the smoothed films, patterning the layers, and developing them, wherein the resists may contain base polymers bearing tert-Bu, tert-butyloxycarbonyl, or adamantyl groups and imide-type acid photogenerators.

ST chem amplification resist pattern sharp edge; photoresist patterning surface smoothing porous film; supercrit carbon dioxide

treatment film photoresist
IT Photoresists
(chemical amplified; formation of chemical amplified resist patterns with
good cross-sectional shapes on films surface-treated with supercrit. fluids)
IT Supercritical fluids
(formation of chemical amplified resist patterns with good cross-sectional
shapes on films surface-treated with supercrit. fluids)
IT 2420-27-1, 2,4,6-Tris(methoxymethyl)aminotriazine
RL: TEM (Technical or engineered material use); USES (Uses)
(crosslinking agent for photoresist; formation of chemical amplified resist patterns with good cross-sectional shapes on films surface-treated with supercrit. fluids)
IT 203945-07-7, SiLK
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES
(Uses)
(organic polymer film; formation of chemical amplified resist patterns with
good cross-sectional shapes on films surface-treated with supercrit. fluids)
IT 41580-58-9, Phthalimido triflate 66003-78-9, Triphenylsulfonium triflate
RL: TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; formation of chemical amplified resist patterns with good cross-sectional shapes on films surface-treated with
supercrit. fluids)
IT 59269-51-1, Poly(vinylphenol) 328249-39-4 627077-03-6, γ-Butyrolactone methacrylate-methoxymethyl acrylate copolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(photoresist; formation of chemical amplified resist patterns with good
cross-sectional shapes on films surface-treated with supercrit. fluids)
IT 124-38-9, Carbon dioxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(supercrit.; formation of chemical amplified resist patterns with good cross-sectional shapes on films surface-treated with supercrit. fluids)

=> d his

(FILE 'HOME' ENTERED AT 20:31:49 ON 14 MAR 2008)

FILE 'REGISTRY' ENTERED AT 20:32:00 ON 14 MAR 2008
L1 0 S DIMETHYLHEXANE AND DIMETHACRYLATE
L2 2 S DIMETHYLHEXANE AND DIACRYLATE
L3 1 S 188837-15-2
L4 122 S DIMETHYL AND HEXANEDIOL AND DIACRYLATE

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L5          122 S DIMETHYL AND HEXANEDIOL AND DIACRYLATE
L6            2 S C14H22O4/MF AND DIACRYLATE

     FILE 'CA' ENTERED AT 20:35:52 ON 14 MAR 2008
L7           14 S L3
L8           32 S CO AND ACRYLATE AND PHOTOACID
L9            1 S CARBON DIOXIDE AND ACRYLATE AND PHOTOACID

=> log y
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                      ENTRY    SESSION
FULL ESTIMATED COST                                  163.70     240.47

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                      ENTRY    SESSION
CA SUBSCRIBER PRICE                                  -35.25     -35.25

STN INTERNATIONAL LOGOFF AT 20:38:36 ON 14 MAR 2008
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